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1893-1898

SIXTH ANNUAL REPORT

[illegible]

CORPORATION

Rhode Island College of Agriculture and Mechanic Arts,

GENERAL ASSEMBLY AT ITS JANUARY SESSION, 1894.

[illegible]

OLLEGE OF AGRICULTURE AND MECHANIC ARTS.

[illegible]

[illegible]
E. L. F[illegible]

ANNOUNCEMENT.

Since the above report was issued, the institution has come into possession of the funds contested by Brown University; namely, $50,000 (1862 Land Grant Fund), $68,000 (the accumulation of the Morrill Fund to date) and the $25,000 annual appropriation which comes from the United States government. On April 19th, the Legislature passed an act authorizing the State Treasurer to pay to Brown University the sum of $40,000, in consideration of which the University was to make over to the state the original grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund. This has been done, and this institution now stands as the Agricultural and Mechanical College of Rhode Island, with adequate means of support on a college basis.

By means of this addition to its resources, the college will be enabled greatly to increase its facilities for instruction, adding machinery and tools to its mechanical outfit, and stock and a dairy to its Agricultural department, as well as to enlarge its library, making the same the greatest possible aid in all lines of instruction.

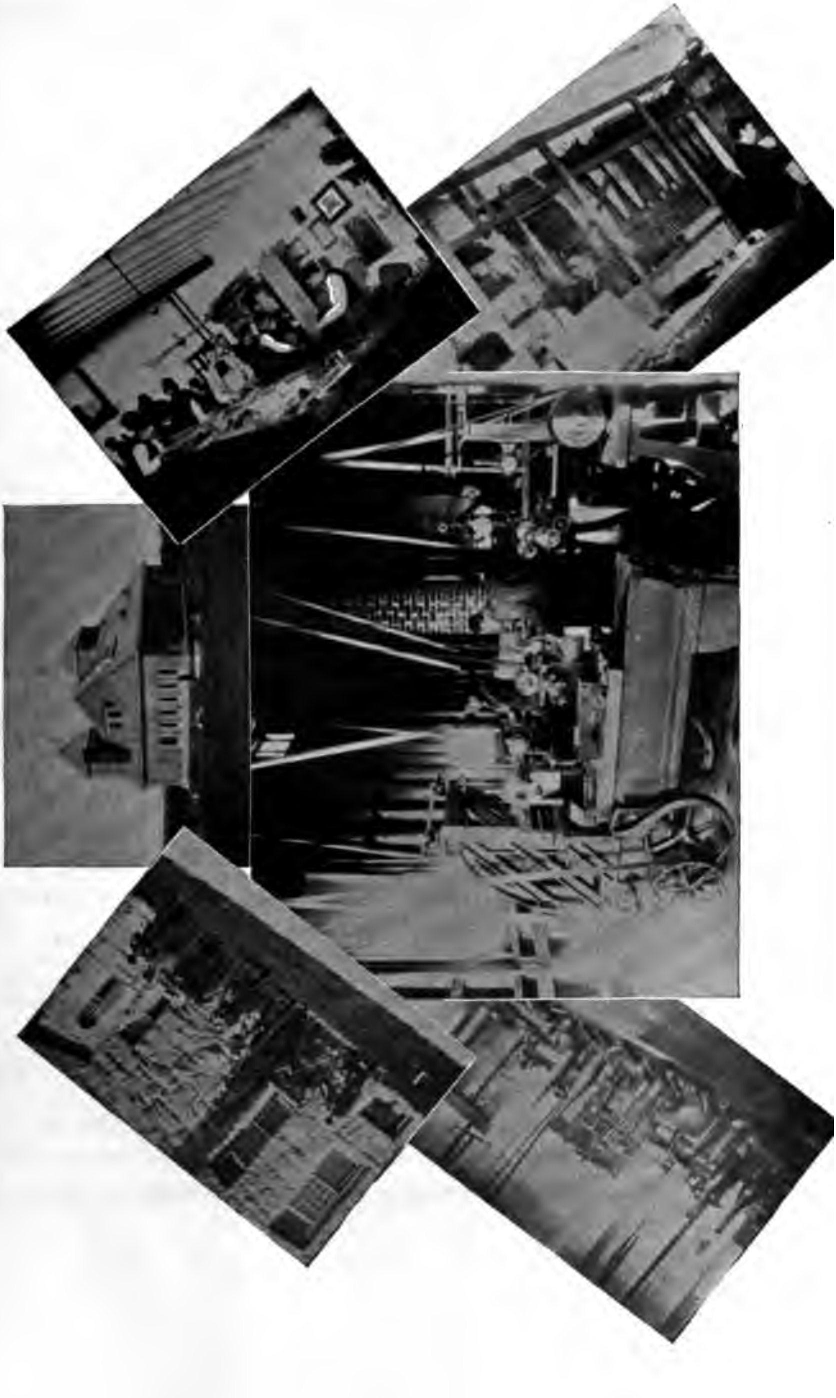
An excellent Art Hall, well equipped, will be ready for occupancy September 1st..

A military instructor will be appointed to begin his duties at the opening of the fall term.

The state offers Scholarships in the departments of agriculture, art, engineering, horticulture, literature and language, mechanics and science, to all worthy young men and women, residents of Rhode Island, who can satisfactorily meet our entrance requirements.

Entrance examinations . June 8 and September 17, at 10 A. M.
Term begins . . . . September 18.

JOHN H. WASHBURN, PH. D.,
PRESIDENT RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS, Kingston.



State of Rhode Island and Providence Plantations.

SIXTH ANNUAL REPORT

OF THE

CORPORATION

OF THE

Rhode Island College of Agriculture and Mechanic Arts,

MADE TO THE

GENERAL ASSEMBLY AT ITS JANUARY SESSION, 1894.

PART I.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

(PART II.—Agricultural Experiment Station—is printed under separate cover.)

PROVIDENCE:
E. L. FREEMAN & SON, PRINTERS TO THE STATE.
1894.

COLLEGE CALENDAR.

1894.

January 3d,	Term begins.
" 25th,	Day of Prayer for Colleges.
February 22d,	Washington's Birthday.
March 28th,	Term ends.

Spring Term.

April 5th,	Term begins.
———,	Arbor Day.
May 30th,	Decoration Day.
June 5th,	Senior Examinations begin.
" 8th, 10 A. M.,	Entrance Examinations.
" 10th,	Baccalaureate Sermon.
" 11th, 7:45 P. M.,	Faculty Reception.
" 12th, 10 A. M.,	Commencement Exercises.

Fall Term.

September 17th, 10 A. M.,	Entrance Examinations.
" 18th,	Term begins.
December 21st,	Term ends.

1895.

January 2d,	Winter Term begins.
" 2d,	Winter Course in Agriculture and Mechanics begins.
March 29th,	Term and Winter Course ends.
April 9th,	Spring Term begins.
June 14th,	Commencement.

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Class in Agriculture Scoring Cattle.
Chemical Laboratory. Class in Chemical Laboratory.
General View of College Buildings.
View of Student's Room.
Foot Ball Team. Plant House.

REPORT.

To His Excellency, D. Russell Brown, Governor, and the Honorable, the General Assembly of the State of Rhode Island, at its January Session, 1894:

KINGSTON, January 31st.

In our last annual report a brief review of the legislation touching the establishment of the Rhode Island College of Agriculture and Mechanic Arts was given. The act of incorporation was printed in full, beginning upon page twelve (12), and in subsequent pages was given an account of the demand made by the Corporation of Brown University upon the General Treasurer for the funds appropriated by said act to the maintenance of this college, and the legal proceedings instituted by them to prevent the General Treasurer from paying said funds to the Treasurer of this Board of Managers.

At the time of making our last report the case was pending before the United States Circuit Court. Attorney General Robt. W. Burbank as the legal representative of the State was made a party defendant in the case. James Tillinghast, Esq., of Providence, was employed by the Board of Managers of this College, and Arnold Green, Esq., had in charge the interests of Brown University. The case came up for hearing on May the 29th, 1893, before His Honor, Judge Carpenter, who on the 31st of May handed down the decision which we quote below in full:

CARPENTER, J. This bill is brought by the trustees and fellows of Brown University against the Rhode Island College of Agriculture and Mechanic Arts, Melville Bull, treasurer of said corporation, and Samuel Clark, General

the principle is invoked that in no court may a suit be brought against a State without its consent. The decision as to what constitutes a suit against a State is therefore in point as an authority.

I shall assume, as contended by the respondents, that this action may not be maintained if it be in substance against the State. This proposition does not seem to me in any degree to depend on the allegation of sovereignty in a State, in the strict sense of that word. Sovereignty is an indivisible inherent attribute, incapable of any derogation by law, and doubtless involving an immunity from suits or legal proceedings of any sort. But under the Constitution as originally adopted a State might be sued by a citizen of another State. *Chisholm* vs. *State of Georgia*, 2 Dall. 419. And the 11th article of amendment does not prohibit a suit by a foreign sovereign or State against a State of the Union, and it seems that such a suit might now be maintained. Compare memoir, etc., of B. R. Curtis, 1, 281-284. So, too, it is undoubted that a State may now be sued by another State. And if it be said that the necessary consent to be sued was involved in the act ratifying the Constitution it may be replied that without the consent of some certain State the 11th amendment may now be abrogated and the judicial power of the nation may be restored as it was in the beginning and still further extended; so that in this respect, as, indeed, in most if not all other respects, the supposed sovereign is in point of fact subject to a power superior to itself and covering and including its whole territory. It may, however, be taken as the general law of the land that suits by private persons against a State may not be maintained. Into the origin and reason of this rule it is not necessary for the present purpose to inquire. Perhaps the specific question here to be determined is whether this suit be forbidden by the law of Rhode Island, since if forbidden to the Courts of the United States only by virtue of the 11th amendment, it might be the proper course to remand it to the Supreme Court of Rhode Island rather than to make an order on this demurrer.

I do not find that the courts of this State have specially passed on this question; but I think it may be taken to be an assumption, which would underlie any decision should such be required, that such a suit as this is alleged to be cannot be maintained. And so it must be for this purpose taken to be the general law, and so of force here as elsewhere. In *Cunningham* vs. *Macon & B. R. Co.*, 109 U. S. 446, the Court assumed "as a point of departure unquestioned" and conceded in all the cases that "neither a State nor the United States can be sued as defendant in any court in this country without their consent except in the limited class of cases in which the State by virtue of the original jurisdiction conferred on that court by the Constitution."

This statement of principle is indeed more than sufficient to decide the case, then, before the Court, since that case also was an action in the United States Court against a State by a citizen of another State; nevertheless, I take it as sufficient statement of the general law for the purpose of this case.

I come then to the question whether the grant in the act of Congress of 1890 be a grant to the State or a grant to the Treasurer of the State or to the college through him as a mere channel of payment."

It is worth while to observe that the original grant made in the act of 1862 for the purpose of founding these colleges was a grant to the State, and the control of the fund, and probably also of the colleges established thereby, was committed to the State. This is not denied here, and while it is by no means decisive, it seems to me at least to suggest that if the supplementary funds granted in 1890 are to be otherwise administered there should appear at least an undoubted inference to that effect from the later act of Congress. The second act must doubtless be taken to have passed in view of the particular as well as the general provision of the first act.

Coming, then, to a consideration of the verbal provisions of the act of 1890, I find that it first provides "that there shall be and hereby is annually appropriated * * to be paid as hereinafter provided, to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may hereafter be established," in accordance with the act of 1862, certain sums of money, to be applied to certain purposes; that "the annual amount to be paid" after ten years "to each State and Territory shall be $25,000;" "that no money shall be paid out under this act to any State or Territory for the support and maintenance of a college when a distinction of race or color is made in the admission of students," and that the money appropriated shall in such case be divided according to a prescribed method.

The second section of the act is as follows:

Section 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the 31st day of July of each year by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the Treasury of the United States to the State or Territorial Treasurer, or to such officer as shall be designated by the laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college or the institution for colored students, immediately pay over said sums to the Treasurers of the respective colleges or other institutions entitled to receive the same, and such Treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior on or before the first day of September of each year a detailed statement of the amount so received and of its disbursement. The grants of money authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants; provided that payments of such installments of the appropriation herein made shall become due to any State before the adjournment of the regular session of Legislature meeting next after the passage of this act shall be made upon the assent of the Governor thereof, duly certified to the Secretary of the Treasury.

The act then goes on to provide that "if any portion of the moneys received by the designated officer of the State or Territory for the further or more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this act, shall by any action or contingency be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory. * * * And further that "the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory whether it is entitled to receive its share of the annual appropriation for colleges or of institutions for colored students under this act, and the amount which thereupon each is entitled respectively to receive;" and that "if the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the Treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior;" and that "the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld, and if so the reasons therefor."

These, I believe, are all the words in the act important to be considered, unless it be the provision that the Presidents of the colleges shall make annual report to the Secretary of Agriculture and the Secretary of the Interior as to the work, condition and progress, receipts and expenditures of the colleges.

It seems to me very plain that these words import on their face a grant to the State and by consequence a duty in the State to administer the grant for the prescribed purpose; and I am unable to see any consideration arising from the nature of the case which should modify this plain import. The provisions as to payment to the Treasurer and payment by him do not necessarily exclude the controlling action of the State.

It is convenient that a particular person be designated as the agent for receipt and disbursement; and these words make this designation without stating, its terms at least, whether he acts as agent for the State or for the Government. But the general scope of the act is clearly consonant only with a grant to the State. The money is to be paid to each State; the amount to be "paid to each State" is to be so much; no money shall be "paid to any State" in certain contingencies; the money is spoken of as "appropriated to the States," and the installments as becoming "due to any State;" that the fund, if lost, shall be replaced by "the State or Territory to which it belongs;" that the Secretary shall report "as to each State and Territory whether it is entitled to receive its share;" and that the Secretary in certain cases "shall withhold a certificate from any State or Territory of its appropriation." It is also provided that the Secretary shall report "the disbursements which have been made in all the States and Territories, and also whether the appropriation of any State or Territory has been withheld."

Those latter words do, indeed, give color to the suggestion that the reference to a grant to the States imply not a grant to the States as political bodies, but rather grants to persons or corporations within the limits of these States. But all the other phrases of the act look the other way. The act, verbally read, leaves no ground for the interpretation urged by the complainant.

But a consideration of the purpose and scope of the act seems to me still more persuasive. Under the act of 1862 the State controls at least the fund which supports the college and is liable to make good any loss or misapplication of the principal. Under the act of 1890 the State is equally liable and ought to have at least an equal control. The very questions which will arise if this bill be retained suggest that they are fit to be determined by the State only under whatever supervision that Congress may see fit to exercise. The complainant contends that the Treasurer, under the act of Congress, has the simple ministerial duty, to pay over the funds to the Treasurer of the Agricultural College. But here, it appears are two corporations each claiming to be the beneficiary. In order to determine between these conflicting claims he must decide what action is necessary to constitute a beneficiary, and also whether such action has been in favor of each of the claimants. This decision seems to me appropriate for the State by legislative act and not for an officer controlled by judicial mandate. The State is to establish the beneficiary, to control its funds, to be responsible for its misdeeds and for its errors, if any there be, as to the application of funds; and I find myself unable to resist the conclusion that unless restrained by clear words or certain implication, the State has the sole right to ascertain in the beginning and at each successive step the identity of the corporation which it has so designated and for which it is so reponsible.

The demurrers must, therefore, be sustained.

The position taken by the Attorney General of the State and the counsel for this College, that the State could not be sued without its consent, and that the injunction restraining the General Treasurer from paying the funds received for agricultural and mechanial education under the Congressional act of August 30th, 1890, to the treasurer of this College as provided by the act of incorporation passed May 19th, 1892, was, in fact, a suit against the State, was sustained by the Court, and on June 16th the decree was entered dissolving the injunction and dismissing the bill with costs. Brown University, however, appealed from the decree to the Supreme Court of the United States, and some time is likely to elapse before a hearing can be reached. Meantime the fund received by the General Treasurer under the act of August 30th, 1890, amounts to $88,318.42, and is not available for the support of this institution. The additional appropriation made last year, because the said fund could not be used, becomes necessary again this year, and will be necessary each year until the Morrill funds become available.

Since the opening of the last fall term a full complement of classes has been in attendance, and the coming June will witness the graduation of the first class.

The report of Dr. J. H. Washburn, President of the College, which we have the pleasure to present herewith gives somewhat in detail the additions and improvements made during the year. As far as possible the various departments have been equipped to perfect the instruction authorized by the course of study.

The report of Hon. Melville Bull, Treasurer of the Board, is appended to the report of the President of the College.

The Board of Managers have held fifteen meetings during the year, of which seven have been held at Kingston and eight in Providence.

Respectfully submitted by the Board of Managers,

CHAS. O. FLAGG,

President.

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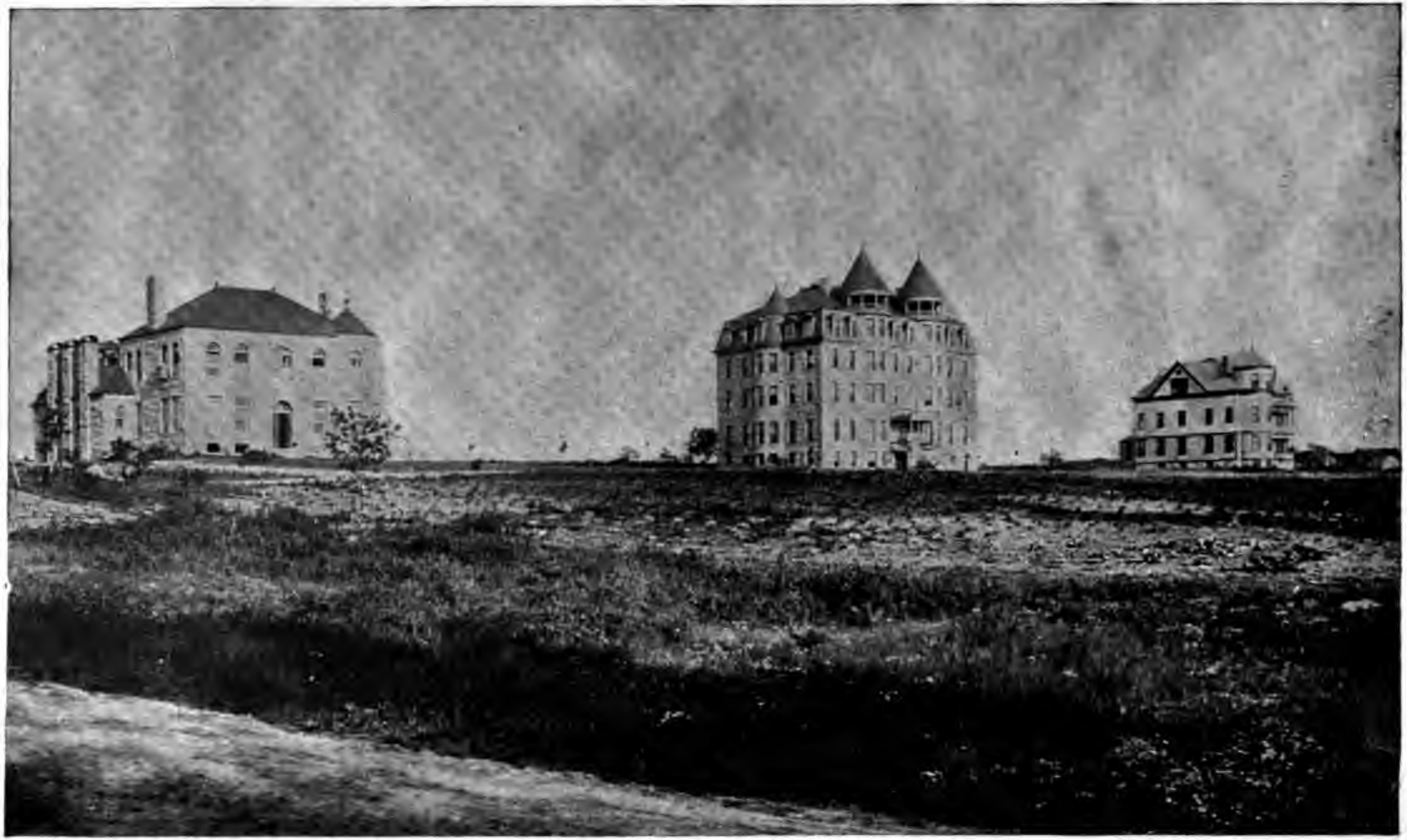

GENERAL VIEW OF COLLEGE BUILDINGS.

REPORT OF THE PRESIDENT.

To the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts:

GENTLEMEN: It gives me pleasure to submit to you the following report concerning the progress and needs of our Institution:

HISTORY OF THE INSTITUTION.

In 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating $15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

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* See Bulletin No. 1 of the Experiment Station.

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded, which had genuine agricultural and mechanical colleges. So great was the dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6.)

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with $15,000, and continuing with a yearly increase of $1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Statutes, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis with an entirely new course of study. During the past year we have added a new class to our numbers; now we have for the first time four classes. The scholarship of the last entering class was somewhat better than that of any preceding class, due to the fact that we have required a higher percentage at the entrance examination.

The increase in our means through the additional appropriation by the last General Assembly allowed us to fulfil the requirements of the law incorporating this institution as the Rhode Island College of Agriculture and Mechanic Arts, by adding to our faculty instructors for a mechanical course. In May last Prof. Wm. E.

Drake was called from Pratt Institute, Brooklyn, where he has taught for the past eight years, to take charge of our mechanical department. He is giving instruction in mechanics, both applied and theoretical, and in physics. His work has been in every way satisfactory. His report will be submitted later.

In September last Dr. O. C. Wiggin accepted the chair of biology. We feel that his experience and knowledge will be an especial benefit to those about to step out into practical life. We are fortunate in having an able physician in the faculty in case of accident or sickness, which is so apt to visit sooner or later an institution of this kind. The department of English has a new instructor, Miss Ruth M. Williams, who is teaching the Freshman English and the bookkeeping in an acceptable manner. There has been a decided growth in the facilities for instruction in our different departments, which will be noticed more fully under the individual reports. One of the most pleasing improvements is the fitting up of an excellent studio for the art department, which is under the able management of Miss Mary P. Helme, recently teacher of art at the Friends' School, Providence.

The Reading Room Association of the students has furnished the reading room with the following periodicals: The Century, Harper's, Frank Leslie's, The Cosmopolitan, The Californian, The Review of Reviews, Popular Science Monthly, The North American Review, The Forum, The Chatauquan, The Garden, The Graphic, Harper's Weekly, New York Herald, Ladies' Home Journal, Scribner's, Puck, Providence Journal, Scientific American, California Fruit Grower, Pacific Rural Press, Power, American Machinist, Carpentry and Building, Blacksmith and Wheelwright. The Youth's Companion, Golden Rule and Illustrirte Welt are loaned by individual students for the use of the reading room, and the Breeder's Gazette, Rhode Island Pendulum, Westerly Narragansett Weekly, Evening Telegram, the Monthly Bulletins of the R. I. State Board of Health, and the Congressional Record are donated.

The library has grown. We have already an excellent selection of reference books, but are sorely in need of many more, and hope during the coming year to make further additions.

INSTRUCTION.

GENERAL AND AGRICULTURAL CHEMISTRY.

With our new course of study, instruction in chemistry begins with the Sophomores' third term. It consists of lectures and recitations three hours per week, with laboratory work one afternoon per week. The same number of lectures and recitations is continued during the first term, Junior year, and the laboratory work consists of qualitative analysis two afternoons per week. During the second term, Junior year, organic chemistry is begun, consisting of lectures three hours per week, and qualitative analysis is continued three afternoons per week. During the third term, agricultural chemistry is taught by lectures four hours per week, and qualitative analysis three afternoons per week. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion, analysis of soils, fodders and fertilizers, milk, butter and cheese, tests for poisons in the stomachs of different animals, analysis of fruits for sugar, starch and albuminoids, and the study of chemical changes in soils. Instruction in inorganic chemistry comprises recitations and laboratory work upon Remsen's advanced course in inorganic chemistry. Special illustrations, however, are given in the line of agriculture, physiology and hygiene, for the purpose of making the chemistry of the farm and kitchen familiar to all. In the chemistry of the halogen compounds, especial attention is given to photographic chemistry and manipulation, which prepares the students for a special course in photography, which may be taken as an elective branch in the study of chemistry.

Text books: Remsen's Inorganic Chemistry (advanced course), Remsen's Theoretical Chemistry, Remsen's Organic Chemistry, Orndorff's Laboratory Manual, Appleton's Qualitative and Quantitative Analysis.

The Freshman class study physical geography during the first term. They pay special attention to the scientific phases of it, to the chemistry and geology of the soils, the influence of air and water on the same; and much reading and time are expended on the flora and fauna of the different countries. Warren's Physical Geography is taken as a basis, and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

PRACTICAL BEE CULTURE.

The agricultural men during the first term of the senior year are required to take this branch of agricultural instruction. Others wishing to attend the class may be allowed do so.

A knowledge of the habits of bees, how to breed and improve them, and the principles underlying their management for the production of the greatest amount of honey, is not only of value on account of the opportunities presented by the abundant honey pasturage of many sections of our country, but also in view of the important part bees play in aiding the fertilization of many crops; thus doing greater service than in furnishing honey. This interesting branch will be taught by Mr. Samuel Cushman, Apiarist of the Experiment Station.

This instruction will be thoroughly practical. The natural history, physiology, and the peculiar habits of bees will be taught, to acquaint the student with the reasons for performing the various operations, but the class-room instruction will be but an introduction to the practical work in the Experiment Station Apiary. Here students will occasionally spend a few hours during one spring and fall term; put together hives, prepare boxes for comb honey, open hives of bees, divide colonies, hive swarms, rear queen, re-queen colonies, make several colonies into one, adjust surplus cases, gather the honey crop, clean and crate comb honey, extract and bottle liquid honey, and prepare the colonies to safely pass the winter. Only by actual work among the bees can confidence be gained and the knowledge made really available.

The Apiary of twenty colonies is fitted with the best of hives for performing all the operations in vogue among bee-keepers with the least amount of labor, and furnishes bees, combs, queen-cells, and other illustrative material for use in the class-room. The Station collection of the different hives used by the various leading honey producers is also a valuable aid in this line of work.

An examination on the fundamental principles of bee management as well as to the proper procedure in supposed cases or emergencies, will be made at the end of the course.

Practical demonstration in the Apiary is, to a certain extent, given to all visitors who are specially interested in the work, as well as advice relating to bee management.

GEOLOGY.

This will be taught for the first time by Dr. Wheeler, Chemist of the Experiment Station.

To the President:

The course in geology will embrace a study of the chief divisions employed in historical geology, or the study of rocks, the elements and minerals of which they are composed and the natural processes by which they are changed to soil.

Especial attention will be paid to the study of soil, soil analyses, and the causes of soil sterility.

Occasional excursions will be made to places of especial geological interest for the purpose of fixing more firmly the ideas obtained in the class-room and for the purpose of obtaining a practical idea of the methods employed in making geological maps and general geological observations.

Respectfully submitted,

H. J. WHEELER,

Professor of Geology.

BIOLOGY.

To the President:—

The studies pursued in this department are as follows:—

First year—Elementary Anatomy and Physiology through the winter and spring terms.

Third year—Zoölogy through the fall term.

Fourth year—Advanced Anatomy and Physiology, Comparative Anatomy, Comparative Physiology and Microscopic Anatomy through the entire year; Veterinary Science during the winter term; Constitution of the United States together with State, County and Town Government through the fall term; Political Economy and Sociology through the winter and spring terms; Physiological Psychology through the spring term.

But little use is made of text books in the class room. The small classes render demonstration, familiar lectures and class discussions practicable, and they prove more useful in imparting instruction. Students have free access to libraries pertaining to these various branches, and they are required to own and study one work on each subject at the time under consideration. Much of the instruction is topical. Special attention is given to blackboard and microscopical illustration and to physical demonstration. Experimental work has not yet been widely practicable, owing to the want of a suitable laboratory and of necessary appliances. Dissections of the various domestic animals have been made, however, as often as the material and opportunity have been offered. It is proposed to make, from time to time, such anatomical preparations as may afford experimental work to the student in comparative anatomy and such as can be preserved for future use in the class-room.

Our proximity to the sea and to fresh water lakes and rivers, together with a surrounding country of forest and field, gives us unusual facilities for gathering material for zoölogical study.

With few exceptions the students are doing honest and proficient work. The course laid out for the senior class is fully up to its capacity, but it has shown, in the main, an aptitude rather unexpected. Its special predilection for the study of civil government and political economy was hardly anticipated. No doubt the present industrial disturbances and distresses of the poor in the cities, together with the discussions in Congress of the repeal of the Sherman act and of the tariff changes, as they have come to us through the daily press, have had much to do in awakening an interest in these living topics. Seldom has there been in this country a better opportunity for observing the practical workings of our Legislative and Executive Departments than was afforded by the extraordinary proceedings in Washington last fall.

The universal lack of any knowledge of Latin and Greek on the part of our students is keenly felt in courses of study made up so largely of the natural sciences as we have here. A full and easy comprehension of the terminology of chemistry, botany, geology, zoölogy, entomology, anatomy, physiology and psychology depends on some knowledge of these neglected languages. It is most desirable that a place be accorded to these branches in our course of study, and as early in the curriculum as practicable.

Our hygienic conditions in and about the college buildings are all that can be desired. The health of the students and teachers has been uniformly good. No cases of illness have occurred on the premises during the present college year. The exercise the students get on the College Farm and in the shops of the mechanical department goes far towards supplying the need of a gymnasium. Still, much of the time during the winter a gymnasium would be of great utility to both student and teacher. For several months no out-of-door work is performed, and the students need a systematic physical training under a competent teacher.

Respectfully submitted,

OLIVER C. WIGGIN,

Professor of Biology.

BOTANY AND HORTICULTURE.

To the President:—

Since my last report important additions have been made to the facilities for laboratory instruction in botany and for field instruction in horticulture. These have been highly appreciated by both the students and the instructor.

BOTANY.

A more suitable room has been assigned for the botanical exercises and furnished with appropriate tables and cases. Twelve compound microscopes, two demonstration microscopes, one laboratory microtome, four hand microtomes, four Abbe camera lucidas, four stage micrometers, four ocular micrometers and a Leitz's micro-photographing apparatus have been imported from Germany and placed in use, and suitable reagent cases, dissecting instruments, etc., have been provided. Several valuable books of reference treating of systematic botany, botanical histology and micro-chemistry have been placed in the library and a small number of plants have been added to the College herbarium, which is yet too small.

Only slight changes of minor importance have been made in the course of study, which was explained somewhat in detail in a previous communication. Our laboratory is equipped with well selected apparatus amounting in value to nine hundred dollars.

HORTICULTURE.

A portion of the fruit and vegetable garden previously used by the Experiment Station has been set apart, by the authority of the Board of Managers, as the College garden, and the care of it is transferred to this department. There is now growing in this garden an orchard of 295 fruit and nut trees, with the kinds as follows: 120 apple trees, 160 pear trees, 58 plum trees, 20 cherry trees, 9 peach trees, 2 apricot, 1 nectarine, 1 crimson-leaf prune, 1 Prunus Simonii, 1 persimmon, 1 quince, 2 soft-shelled almond, 2 hard-shelled almond, 2 Russian almond, 4 filbert, 3 English walnut, 2 pecan-nut, 3 Japanese chestnut, 1 Spanish chestnut, 1 Hathaway's chestnut and 1 black walnut. These trees are in a vigorous, growing condition and vary in height from about seven to fifteen feet. There is also in this garden a vineyard of 500 vines which produced during the past year 100 pounds of grapes. The varieties are the Worden, Concord, Moore's Early and Delaware.

There are plantations of the smaller fruits as follows:—½ acre of raspberries (red, yellow and black), ¼ acre of blackberries, ¼ acre of strawberries, 70 currant bushes, 20 gooseberry bushes and 25 Juneberry bushes.

The product of the garden during the season of 1893 has been 34½ bushels of strawberries, 443 boxes of raspberries, 130 boxes of blackberries, 1000 pounds of grapes, 319 heads of lettuce, 224 bunches of radishes, 50 bunches of beets, 36 bunches of onions, 22 bunches of celery, 144 ears of sweet corn, 2 barrels of apples, 3¼ bushels of peas, 1 bushel of beans, 100 cucumbers, 10 bushels of beets, 5 bushels of turnips, 10 bushels of onions, 100 bushels of potatoes, 4½ bushels of tomatoes, 250 cabbage plants and 100 tomato plants. This produce has mainly been used in the Boarding Department of the College, the remainder being readily sold on the grounds at fair market prices.

In the ornamental grounds about the buildings and along the avenues there have been planted during the year 228 shade trees of the following kinds:—119 Norway and sycamore maple, 40 Norway pine, 12 hemlock, 11 European larch, 5 white pine, 5 Siberian arbor-vitæ, 3 Retinospora plumosa, 2 dwarf pine, 1 Chilian pine, 1 apple, 1 European alder, 1 white oak, 1 tulip tree, 1 Canada red-bud, 1 pecan-nut, 1 English walnut, 1 black walnut, 1 weeping willow and 25 ornamental shrubs of various kinds. In addition to this the lawns have been kept in order under my supervision, and, in part, the walks and drives. These operations have been enumerated thus fully in order to show the opportunities that are now offered for actual practical experience in horticulture in connection with the lecture-room exercises.

Respectfully submitted,

L. F. KINNEY,

Professor of Botany and Horticulture.

TEXT-BOOKS.

Botany—Structural Botany, Gray; Physiological Botany, Goodale; Manual of Botany, Gray; Botanist and Florist, Wood; Botany, Advanced Course, Bessey.

Horticulture—The American Fruit Culturist, Thomas, supplemented by lectures on Market Gardening, Forestry and Landscape Gardening.

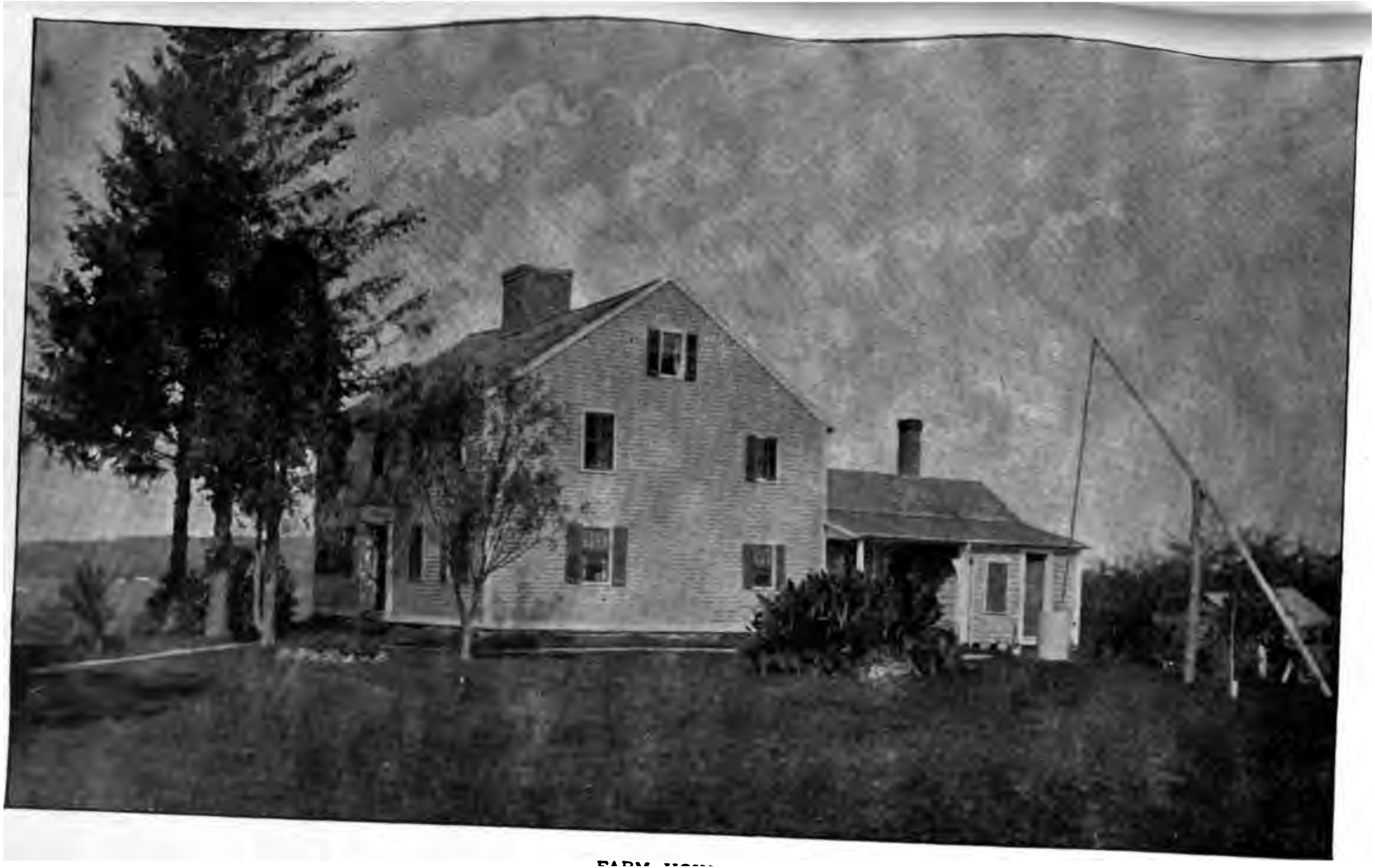
AGRICULTURE.

To the President:

The change in the course of study made necessary by the advancement from School to College organization, and the lengthening of the course one year has required some temporary changes in the agricultural instruction for the Senior and Junior classes, but the present arrangement of topics will be followed with future classes, subject always to change when an improvement can be made.

The term *Agriculture* is broad and comprehensive—including many of the sciences set apart as separate divisions in an agricultural college, and where they are to be taught "in their relation to agriculture." The work of this division is intended to cover ground both practical and theoretical in agricultural knowledge—not included in other divisions—and to further impress upon the student the application of scientific principles to agriculture. The course for the first year is the same for both the agricultural and mechanical students and aims to begin with such subjects as may be somewhat familiar to him and about which he has some elementary knowledge. The soil might quite properly be considered the correct starting-point for an agricultural course, but to study the soil intelligently requires some knowledge of chemistry, and should properly come at such a time in the course as to follow at least elementary instruction in that branch. The same is true of the use of fertilizers and the growth of plants, except that a knowledge of botany is essential in the latter.

One afternoon in each week of the first term of the Freshman year is devoted to the study of farm buildings, their location and convenience of arrangement;



FARM HOU

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farm machinery, its use and care; a discussion of general and special farming with the arrangements of farm buildings and fields for the various kinds of farming, including the subject of fences and fencing. The third term is devoted to the study of land drainage.

The agriculture of the Sophomore year is assigned to the study of the breeds of live stock,—horses, cattle, sheep and swine,—with practice in tracing pedigrees from herd records, and the use of score cards in judging animals. This subject has been very acceptably taught by Mr. J. D. Towar, Assistant Agriculturist. Lectures on farm crops—planting, cultivation and harvesting, are also included in the second year's work. Two terms of the Junior year are given to the study of soils, manures and fertilizers. This includes the relation of water, heat, light and air to the soil as affecting plant growth and crop cultivation.

Some time is given to the careful study of the manures made upon the farm; their value and the best course to pursue in handling them to prevent loss. Chemical and artificial fertilizers as plant foods and as chemical agents in rendering inert material in the soil available to plants, receive the consideration due them. The student is taught how to learn what the soil requires and how to compound the materials to supply the elements found lacking.

Senior year agriculture is devoted to the study of the laws of breeding and stock feeding. The latter includes the compounding of feeding rations for specific purposes in the feeding of various classes of animals and practice in the selection of such waste products used for feeding as will balance the coarse fodders grown on the farm to make a cheap and complete food to produce the most satisfactory results.

The farm, fields and work of the Experiment Station are at all times available for the purpose of illustration. The students are not required to devote their time to manual labor in the common operations of the farm with which they are already familiar. Skill in manual labor is the result of practice, and once the knowledge of and the reason for any certain farm operation is acquired by the student, it is hardly wise for him to spend the time and opportunities of a college course in the acquiring of mere manual dexterity in farm operations. He can easily do that elsewhere. His time here can be used to better advantage.

For the successful management of the farm, a modern barn with root cellars and silo and facilities for the keeping of a dairy, sheep and other farm stock is absolutely necessary. Aside from its value to the farm it would be of great service in many ways to the instructor in agriculture.

Agricultural text-books suitable for class use have not yet reached the state of perfection found in those of other lines of study, and the labor of teaching is augmented by the necessity of lectures and the more frequent use of reference books. The Experiment Station libraries are valuable for this purpose. Collections of chemicals and fertilizing materials, grains, various commercial foods and by-products are used for the purpose of illustration and instruction.

The text-books used thus far are as follows: Draining for Profit and Health, Waring; Horses, Cattle, Sheep and Swine, Curtis; Agriculture, Storer; Stock Breeding, Miles; Feeding Animals, Stewart.

Respectfully submitted,

CHAS. O. FLAGG,

Professor of Agriculture.

ENGLISH.

To the President:—

The study of English extends through the four years of the course and is progressive in its character. It comprises composition, rhetoric and literature.

In the Freshman year there is a review of elementary English. An effort is made to develop a correct literary taste in the students, by reading in class of the representative works of famous authors, usually American. The past term, this instruction has been given most satisfactorily by Miss Williams, the assistant in English.

In the Sophomore year, the study of American literature is continued, and the principles of rhetoric are taught. Written work more advanced than during the first year is also required.

General English literature is studied during the second and third terms of the Junior year. While the subject is presented as a whole, special prominence is given to certain epochs and authors; and a writer is considered not only from the standpoint of his individual genius, but as viewed in the light of his times. Much attention is paid to the careful reading of selections from eminent authors; and whenever it is possible, entire works are chosen. Exercises in composition will be a feature of this work.

In the Senior year, electives in English literature are offered, the plan being to supplement the more general courses of the Junior year by a detailed study of special authors. Essay writing and declamation are required of the whole class.

The books purchased for the library during the past year have added much to the students' interest in literature.

HISTORY.

This subject is so vast that it demands much more time than is at present allotted to it during the Freshman year. As it is now studied, a careful review of American history is followed by a survey of general history. But electives will be offered as the elasticity of the curriculum shall permit. The method is largely topical. As in the case of literature, the books added to the library during the year have greatly increased the efficiency of the department; more, however, are needed. Miss Williams at present has charge of this work.

FRENCH.

As the course is now arranged, French is studied only during the second year; but in the future, it will probably be made elective for the Juniors and Seniors. A student would thus gain a greater proficiency in the language and his acquirements prove of more practical value than is at present possible. During the past year, in addition to work in grammar and composition, short stories and poems, also a play,—"La Poudre aux Yeux"—has been read.

GERMAN.

German is required of all students during the Junior year. The course for beginners consists of grammar, composition, dictation, conversation and the reading of easy stories and poems. During the Senior year, German is for the most part elective; and the work offered for the winter term of 1894 will be the critical reading of Schiller's "Wilhelm Tell" and an outline study of German literature. This past term an advanced division has read with ease and pleasure "Der Fluch der Schoenheit (Riehl) and "Die Harzreise" (Heine). The course will vary from year to year, but will always be adapted to the needs of the classes. The aim will be to teach the student to speak and write simple German, to read the language of science, and to enjoy some of the masterpieces of German literature.

TEXT-BOOKS.

Exercises in English	Strang.
Lessons in English	Lockwood.
Composition and Rhetoric	Williams.
Rhetorical Analysis	Genung.
Practical Rhetoric	Genung.
American History	Montgomery.
General History	Myers.
Familiar Talks on English Literature	Richardson.

Many texts of authors from Chaucer to Longfellow.

Complete French Course	**Chardenal.**
French Reader	**Super.**
French Grammar	**Edgren.**
La Poudre aux Yeux.	**Labiche & Martin.**

Elementary German	**Otis.**
German Reader	**Brandt.**
Die Harzreise.	**Heine.**
Der Fluch der Schoenheit	**Riehl.**

ART DEPARTMENT.

As before mentioned, Miss Helme has conducted this department in an able manner. She has added much to the facilities for instruction, procuring a number of casts and models to be used both in modeling and drawing. The studio, a room 50 x 80 feet, is furnished with three skylights and a large glass door on the north. The room is to be fitted with cases and racks for the individual material of the pupils.

During the Fall term the Sophomores have had drawing and modeling. There has been an advanced class of Seniors working in charcoal and pastel, and a sketch class, open to any students who desired to join it, has spent an hour each week sketching from life.

DEPARTMENT OF MECHANIC ARTS.

All students of the college receive instruction in mechanical work. As may be seen from the tabulated course of study, all of the students in the Freshman class work together in the carpenter shop six hours each week throughout the entire year.

Wood-working is continued in the Sophomore year for an additional term. In the second term the students in agriculture proceed to advanced wood-work, while the students of the mechanical course take up forging. The agricultural students begin forging in the winter term of the Junior year, and devote three hours a week to it for two terms. Information as to the detailed arrangement of both courses may be obtained from the course of study. The character of the work in the shop is carefully chosen so as to be of the greatest possible benefit to the pupil. Thus the agricultural students are given a thorough course in wood-working, which among other things includes the drawing, planning and erection of some small building.

The forging is especially valuable to the same class of students, and they are therefore practised upon such work at the anvil as is commonly found about the farm. On the other hand the mechanical students are not carried so far in wood-working, but spend more time at forging, and then go on to the working of iron with file and chisel, and in the machine shop. Pattern making, molding and casting, and machine work in iron are vitally essential to a mechanic, but they are of much less value to one who is to follow agricultural pursuits.

The course of work done in each branch of the Mechanical Department is made as practical as possible. A series of graded exercises is laid out and the student is required to complete each piece in its order before passing on to the next.

The instructor performs the simpler exercises before the assembled class, and at the same time shows the proper methods of using the various tools. The student then works out the lesson alone, receiving individual instruction if he needs it.

All work is done from working drawings and blue prints, with frequent reference to detailed sketches on the blackboard.

WOOD-WORK.

To the President:

I herewith present the following report: The carpenter shop is equipped with twenty benches and twenty sets of tools; each set consisting of three planes, one saw, one hammer, one hatchet, one try square, one bevel, one compass, one rule, one bit-stock, one brad-awl, one screw-driver, two guages, double and single, one drawing-knife and one spoke-shave. There is also a general tool room in which are special tools. These tools are loaned to the students by means of a check system under the supervision of my assistant, Mr. Lane.

The course in the carpenter shop is a series of exercises in planing, mortising and fitting. Special attention is given to the care and sharpening of tools, which is illustrated by blue prints. The student works entirely from drawings or sketches.

In the wood-turning room we have six wood-turning lathes; six sets wood-turning tools; one jig-saw; one boring machine, one four-side planer and one iron framed splitting and cutting off saw combined.

After completing the course in the carpenter shop the student passes to the turning room, where he must first complete a set of graded exercises before he can attempt the more difficult ornamental forms. There is also a course of machine sawing on circular and scroll saws. During the time the Sophomore class are at work with the machinery the students are in turn assigned to the care and management of the shop and boiler.

The class in wood-carving, of sixteen young women, is doing good work. They have made during the year book-cases, hand mirrors, looking-glass frames, picture frames, chairs, paper knives, crickets, etc.

During the year a complete set of steam and gas pipe tools has been added to our outfit, and all repairs and new piping are now done by our students.

Besides attending to all necessary repairing this department has made stalls in the barn, one eight-panelled shed door 8 x 14 feet, whitewood microscope tables, one dining-table, three oak writing-tables, two large oak book-cases, one microscope case, whipple-trees, fifty storm windows, and dark room for Experiment Station, and piped the same for gas and water. We have also covered the windmill tower, have set up a Rider engine and connected it with the tank and well, and have rebuilt a corn crib, 12 x 14 feet.

Last summer some of our students worked at the mechanical building, lay-floors, putting in windows, piping for water, moving and resetting machinery and hanging shafting. They also fitted up an art studio and a dissecting-room.

Respectfully submitted,

T. C. RODMAN,

Instructor in Wood-Work.

FORGE WORK.

Instruction in forging was begun May 1st, 1893. A building was placed at the disposal of the department and six forges and anvils with the corresponding necessary tools were provided. As occasion requires we can increase the number of forges to about twenty, the greatest number that our present building will accommodate.

Two classes have already received instruction in the forge shop. The Senior mechanical students have been given three hours a week, and the work done has been very satisfactory. This class has finished the short time that was allotted them for forging, and the students are now working in the machine shop.

The Junior mechanical students have spent one afternoon each week in the forge shop and are now producing some creditable work.

The simple operations of drawing, bending and shaping wrought iron are mastered in a few interesting exercises. This is followed by exercises which require welding, and by others in which hardening and tempering are necessary for the completeness of the piece. Some of the articles made are as follows: staples, door hooks, hitch rings, meat hooks, log chains chain hooks, door hinges, whippletree irons, chisels and punches.

An interesting feature of the forge work is the repairing that comes in from the College and the farm.

Our students have repaired log chains and plow chains, have repointed crow bars, stone picks and drills. In fact the iron work about the various departments is kept in excellent repair.

Students have been allowed to bring in for repair jobs of their own and are given help and encouragement to put the articles in good repair again. The agricultural students have not yet been at work in the forge shop, but a special course will be laid out for them which will be still more practical, if possible, than the mechanical course.

CHIPPING AND FILING.

A short course in the working of cast and wrought iron at the bench is given to all students of the mechanical course. Small castings are rough-finished with hammer and cold chisel, and are then smoothed, trued and fitted by means of variously assorted files. This course is completed by the making of several small tools from sheet steel. Calipers, dividers and scribers are made for frequent use in the machine shop.

During the past summer a machine shop and wood-turning room was fitted up in the Mechanical Building, situated in the northeast corner of the College grounds. All the machinery was taken from the College Hall basement and moved to its new location.

The accommodations for these two lines of work are thus somewhat enlarged, and will be sufficient for the present. The machine shop is newly equipped with machinery of the latest and best designs. The list of machinery now includes a 22 x 22 in. x 5 ft. plane, one 14 in. engine lathe, three 11 in.

engine lathes, a 13 in. sensitive drill and shaper. The Seniors of the mechanical course began work in the machine shop Nov. 15, 1893. Any report of their progress for so short a time is hardly possible.

The general outline of the course now being given is as follows: Straight turning, taper turning, cutting threads, making bolts and nuts, eccentric, crank disc face plate, tool post, plum bob, arbors, and hand turning in iron. The planing consists of a series of exercises in plane surface, angular and groove or slot planing.

Advanced work of a practical nature is in projection for the near future. This will be the building of wood-turning lathes for our own shop, and the construction of an engine, dynamos and motors for the department of electricity.

Respectfully submitted,

W. E. DRAKE,

Prof. of Mechanical Engineering and Physics.

MECHANICAL DRAWING.

To the President:

I have the honor of submitting the report of the work done in the department of Mechanical Drawing during the past year. The mechanical and agricultural men composing the Sophomore class began mechanical drawing at the commencement of the winter term. The following subjects were studied: Exercise for drawing pen; exercise for compasses, study of bolts, nuts and screw threads; lettering, plans, elevations and details of a barn. The spring term, instruction in drawing was given only to the Sophomore and Junior mechanical students.

The Juniors solved practical problems in descriptive drawing the first half of the term and finished the course with perspective work.

The Sophomores constructed the intersections and developments of solids, made tracings and blue prints, and put the remainder of the time on machine sketching and drawing. The models used were an iron vice, anvil, mitre-box, door-hanger, monkey wrench and saw clamp. The architectural class made the drawings of the elevations, plans and details of several buildings. The Junior mechanical men had descriptive geometry during the fall term. The problems were drawn and solved with instruments on paper.

I have also had charge of the work in surveying. The spring term the class worked six hours in the field and one in the class-room each week. Several fields were surveyed, plotted, and the areas computed.

The road construction class levelled and established the grades for two roads, laid out curves and estimated areas. Considerable outside reading was done on different methods of road construction, strength of materials and bridges.*

The department has an equipment valued at $800.

Respectfully submitted,

FREDERICK A. LANE,

Instructor in Surveying and Mechanical Drawing.

MATHEMATICS.

To the President:

Work has been carried on in the Mathematical Department according to the lines laid down a year ago, but each succeeding year emphasizes more strongly than before the fact that the ground which must be gone over by students wishing to take a degree cannot be covered with perfect satisfaction until it becomes possible for us to require for entrance, elementary algebra, at least to quadratics. This would free the last two terms of the freshman year for more advanced work, and would greatly relieve the pressure throughout the entire course.

No radical changes in courses or text books have been made since the last report.

In September of the present year Professor Drake took charge of the entire work in Physics, a change which was necessitated by the greatly increased requirements made upon the department at the time of our incorporation as a college. At the same time Mr. Lane took in addition to the surveying and descriptive geometry, the work in freshman algebra, and has carried it on with entire satisfaction to all concerned.

In the winter term of the present year a short course in general astronomy will be offered to members of the Senior class, in which it is the intention to emphasize the fundamental laws which govern the universe, and to make the class familiar with the general characteristics of the various members of our own solar system by the aid of copious stereoscopic views.

The work done by the students during the year just past has been, as a whole, very satisfactory, its quality having shown a distinct improvement over that of the previous year.

Respectfully submitted,

A. BOSWORTH,

Professor of Mathematics.

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*The Mechanical Department acknowledges the receipt of a hand iron drill, donated by C. H. Armstrong & Son, of Wakefield.

TEXT-BOOKS.

Academic Algebra	Wells.
Plane Geometry	Wells.
Solid Geometry	Wells.
Trigonometry	Wentworth.
Analytic Geometry	Hardy.
Elements of Calculus	Taylor.
General Astronomy	Young.

PHYSICS.

To the President:

The department of Physics is now located in the basement of College Hall. The wood-turning room made vacant in the summer has been provided with benches and tables suitable for work in physics. The room is also furnished with a solar lantern which may be used for experiments in light or as a magic lantern for illustrated lectures.

The instruction is given as set forth in the course of study. The Sophomore class during the term just completed has nearly finished the subjects of elementary mechanics and sound. Electricity will be thoroughly studied in the winter term and the third term will be devoted to heat and light. The Juniors have been given a special or advanced course in electricity. The general plan of this course is to make a comprehensive study of electricity in its modern practical applications.

Thompson's Electricity and Magnetism was used as a text-book, and this was followed by a series of lectures given by the instructor.

Some of the subjects treated are: Types of dynamo machines, armatures, winding and field magnets, arc lighting, incandescent lighting, engines for electrical machinery, electric lamps, electric motors, electric railways, plating, electric furnaces, storage batteries, telegraph, telephone, electricity as applied to domestic uses. All students spend hours each week in the laboratory investigating for themselves the principles taught in the class-room.

STRENGTH OF MATERIALS AND MECHANISM.

Strength of Materials and Mechanism are taken up by the Juniors in the spring term. Anderson's "Strength of Materials" was the text-book used for the study.

As no satisfactory text-book on Mechanism could be found the instructor was forced to give the matter in the form of notes. The notes were duplicated by means of the hektograph and each pupil received a copy.

APPLIED MECHANICS.

In the Senior year the students of the mechanical course take up the study of applied mechanics. As the present class did not have a sufficient knowledge of integral calculus, Rankin's "Mechanics" was exchanged, for the time, for Merriman's "Mechanics of Materials." The subject matter studied includes the investigation of the strength of simple and continuous beams and girders, strength of rods, pipes, cylinders, shafting, riveted joints and columns. In the third term the Seniors will make a study of the principles of steam and the steam engine.

Respectfully submitted,

WILLIAM E. DRAKE,

Professor of Mechanical Engineering and Physics.

THE COURSES OF STUDY.

The object of our courses of study is the fitting of men for agricultural and mechanical pursuits in life, whether they be wholly practical, theoretical, or the happy combination of practice and theory.

The regular course is intended to accommodate students who pass our entrance examination with a high standing, who have had two or more years of high school work, and who are able to take the whole course in agriculture or mechanics, or studies and training in both courses, and who after four years of high standing are to become applicants for the degree of bachelor of science. There is another class of earnest students who have not had sufficient preparation to take the full course in four years, and who may be able to take the degree with five years work. We have young women applicants for the degree who wish to substitute for the practical and theoretical work in agriculture and mechanics an equivalent amount of study and training in art, science, English, French. German, Latin, or history and political economy. We have also a large number of earnest students for special work in agriculture or mechanics. They are often poorly prepared, and take much more practical work than those studying for a degree. No student is allowed to take shop work alone. He must choose one or two of the branches taught and maintain a fair standing in them. By our system of electives these students may take advanced courses in those studies for which they seem especially fitted and which are calculated to be of especial value in the vocation they have chosen.

One thing is sadly needed in our course of instruction for a considerable number of our above-mentioned pupils, namely, a course in elective Latin, extending through the first three years. I strongly urge the adoption of this course, beginning with September of the present year. There are many well-trained pupils who desire to take advantage of our excellent shops, and horticultural and agricultural instruction, but whose parents do not wish them to drop their Latin; it being believed by many that one or two years of Latin helps more towards acquiring a proper knowledge and understanding of our own language than the same study could possibly do applied directly to English. And the invaluable aid towards understanding the scientific terms used in every branch of science taught during each term could not be estimated. It would do away with the hard work necessary to acquire the terminology of every new science.

WINTER COURSE IN AGRICULTURE AND MECHANICS.

That the college may become as useful as possible to those in the State who desire to receive instruction in all, or in a portion of the subjects taught, the Board of Managers have considered it wise to open a short course in Agriculture and Mechanics. Persons taking this course may have special instruction in veterinary science, agriculture, the chemistry of fertilizers, dairying (including milk, butter and cheese analysis), carpentering, wood carving, iron work, and be permitted to take any recitation or lecture given to the regular classes, and as may seem best adapted to time and need of the individual. The course of study for such as take this special course will be decided during the first week of the term, and no change in this course will be allowed during the term unless by consent of the faculty.

Applicants must be at least sixteen years old, must present a certificate of good moral character from their teacher or pastor, and show that they have had sufficient schooling to profit by the course laid out by the faculty.

This short course will continue during the winter term, from January 4 to March 29.

COURSE OF STUDY

OF THE

Rhode Island College of Agriculture and Mechanic Arts.

Freshman Year.

FIRST TERM.

Algebra	5	hours.
English	5	"
Physical Geography	3	"
History	2	"
Latin (elective)	3	"

Afternoon.

[1]Agriculture	2	hours.
[2]Military Drill	1	"
Bench Work in Wood	6	"

Saturday.

Military Tactics	1	hour.
Inspection	1	"
[2]Military Drill	1	"

SECOND TERM.

Algebra	5	hours.
English	5	"
Physiology	3	"
Latin (elective)	3	"
History	2	"

Freshman Year.

Afternoon.

Bookkeeping and Business Law	5	hours.
Wood Work	6	"

Saturday, same as First Term.

THIRD TERM.

Algebra and Logarithms	3	hours.
English	4	"
Geometry	4	"
Physiology	2	"
History	2	"
Latin (elective)	3	"

Afternoon.

Free-Hand Drawing	4	hours.
[3]Agriculture	4	"

Saturday, same as First Term.

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[1] Farm Management, Buildings, Fences, and Tools.

[2] Military instruction will be given on the appointment of an officer by the War Department to our college.

[3] Drainage.

Agricultural Course. Sophomore Year.

FIRST TERM.

Geometry	5	hours.
[1] Agriculture	3	"
Physics	3	"
English	2	"
[2] Modern Language	3	"
Latin (elective)	3	"

Afternoon.

Modeling	2½	hours.
Free-Hand Drawing	2	"
[3] Practical Agriculture	2	"
Physical Laboratory	2	"
Wood Turning	3	"

Saturday, same as Freshman Year.

SECOND TERM.

Trigonometry	3	hours.
Botany	4	"
English	2	"
Physics	3	"
Modern Language	3	"
Latin (elective)	3	"

Afternoon.

Mechanical Drawing	2	hours.
Constructions	2½	"
Wood Turning	3	"
Physical Laboratory	2	"

Saturday, same as First Term.

THIRD TERM.

Surveying	1	hour.
Physics	3	hours.
Botany	5	"
Modern Language	3	"
Chemistry (Inorganic)	3	"
Latin (elective)	3	"

Afternoon.

Physical Laboratory	2	hours.
Practical Surveying	6	"
Experimental Chemistry	2	"

Saturday, same as First Term.

Mechanical Course. Sophomore Year.

FIRST TERM.

Plane Geometry	5	hours.
Solid Geometry	3	"
Physics	3	"
English	2	"
[2] Modern Language	3	"
Latin (elective)	3	"

Afternoon.

Free-Hand Drawing	2	hours.
Wood Turning	6	"
Physical Laboratory	2	"

Saturday, same as Freshman Year.

SECOND TERM.

Trigonometry	3	hours.
Botany	4	"
English	2	"
Physics	3	"
Modern Language	3	"
Latin (elective)	3	"

Afternoon.

Mechanical Drawing	2	hours.
Forging	6	"
Physical Laboratory	2	"

Saturday, same as First Term.

THIRD TERM.

Surveying	1	hour.
Physics	3	hours.
Botany	5	"
Modern Language	3	"
Chemistry	3	"
Latin (elective)	3	"

Afternoon.

Experimental Chemistry	2	hours.
Physical Laboratory	2	"
Mechanical Drawing	3	"
Forging	3	"

Saturday, same as First Term.

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[1] Breeds of Live Stock.

[2] Modern Language will be French or German; a course in conversation, composition, and scientific French and German is given.

[3] Farm crops and their cultivation.

Agricultural Course. Junior Year.

FIRST TERM.[1]

Road Construction and Leveling	3 hours.
Zoölogy and Entomology	4 "
Inorganic Chemistry	3 "
Modern Language	3 "
Horticulture	2 "
Latin (elective)	"

Afternoon.

Qualitative Analysis	4 hours.
Practical Horticulture	2 "
Leveling and Road Surveying	3 "
French (elective)	3 "

SECOND TERM.[1]

English	4 hours.
[2] Agriculture	3 "
Organic Chemistry	3 "
Modern Language	3 "
Physiological Botany	2 "
French (elective)	3 "
Latin "	3 "

Afternoon.

Microscopy	2 hours.
Forging	3 "
Qualitative Analysis	6 "

THIRD TERM.[1]

English	4 hours.
[2] Agriculture	4 "
Agricultural Chemistry	4 "
Modern Language	3 "
French (elective)	3 "
Latin "	3 "

Afternoon.

	Chemical Laboratory	6 hours.
Elect 1.	Free-Hand Drawing	6 "
	[3] Agricultural Mechanics	6 "
	Botanical Laboratory work	6 "

Mechanical Course. Junior Year.

FIRST TERM.[1]

Inorganic Chemistry	3 hours.
Analytical Geometry	4 "
Modern Language	3 "
Electricity and Magnetism	3 "
Descriptive Geometry	2 "
Latin (elective)	3 "

Afternoon.

Qualitative Analysis	4 hours.
Physical Laboratory	2 "
Lathe Work	3 "

SECOND TERM.[1]

English	4 hours.
Analytical Geometry	4 "
Modern Language	3 "
Calculus	3 "
Latin (elective)	"

Afternoon.

Qualitative Analysis	6 hours.
Lathe Work	3 "
Mechanical Drawing	3 "

THIRD TERM.[1]

English	4 hours.
Calculus	3 "
Strength of Materials	2 "
Modern Language	3 "
Principles of Mechanism	3 "
Latin (elective)	"

Afternoon.

	Mechanical Laboratory	2 hours.
	Architectural Drawing	2 "
Elect.	Chemical Labratory	6 "
	Mechanical Drawing	3 "

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[1] Saturdays, same as in Freshman year.

[2] Soils, Manures, and Fertilizers.

[3] Wood or Iron Work.

Agricultural Course. Senior Year.

FIRST TERM.

Anatomy and Physiology of Domestic Animals, and Veterinary Science	5 hours.
Political Economy and Science of Government	4 “
Modern Language (elective)	3 “
[1] Agriculture	3 “

Afternoon.

Apiary Work	2 hours.
Orations	1 “
Art Work (elective)	3 “

SECOND TERM.

Veterinary Science	4 hours.
Political Economy and Science of Government	4 “
Astronomy	4 “
Market Gardening	3 “
Modern Language (elective)	3 “

Afternoon.

Geology	2 hours.
Orations	2 “

THIRD TERM.

Forestry and Landscape Gardening	2 hours.
Geology	2 “
Mental Science	4 “
Veterinary Science	4 “
Thesis Work	3 “
Modern Language (elective)	3 “

Afternoon.

Geology Excursions	2 hours.
Art Work (elective)	3 “

Mechanical Course. Senior Year.

FIRST TERM.

	Calculus	3 hours.
	Political Economy and Science of Government	4 “
	Theoretical and Applied Mechanics	5 “
Elect 1.	English Literature	3 “
	Engineering	3 “
	Modern Language	3 “
	Chemistry	3 “

Afternoon.

Orations	2 hours.
Practice, Mechanical	6 “
Art Work (elective)	3 “

SECOND TERM.

	Astronomy	4 hours.
	Political Economy	4 “
	Theoretical and Applied Mechanics	4 “
Elect 1.	English Literature	3 “
	Modern Language	3 “
	Engineering	3 “
	Chemistry	3 “

Afternoon.

Orations	2 hours.
Practice, Mechanical	6 “

THIRD TERM.

	Thesis Work	3 hours.
	Mental Science	4 “
	Theoretical and Applied Mechanics	5 “
Elect 1.	English Literature	3 “
	Modern Language	3 “
	Chemistry	3 “
	Engineering	3 “

Afternoon.

Practice, Mechanical	6 hours.

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[1] Stock Breeding and Feeding.

REQUIREMENTS FOR ADMISSION.

The requirements for admission to the college embrace both an oral and written examination in arithmetic, geography, English grammar and United States history. Applicants for the regular course will find some knowledge of algebra of great assistance.

We have no facilities for the boarding of young women at the college, the demand for industrial education for young women not having been sufficient to warrant the furnishing of special dormitory accommodations. However, if the young women can find accommodations elsewhere, they may receive a part or the whole of the instruction given, substituting for agriculture, horticulture and mechanics, English, Latin, German, French, art and mathematics.

ENTRANCE EXAMINATION PAPERS USED IN 1893.

Entrance Examination in Arithmetic, September 13, 1893.

1. Find the L. C. M and G. C. D of 724 and 896.

2. Find the cost of 8,462 lbs. of hay, at $9.50 a ton.

3. A field containing 18 acres is 80 rods long. Find the cost of fencing it at $1.25 a rod.

4. A merchant sells a wagon for $161, and gains 15 per cent. How much does he gain?

5. Find the value of

$$\frac{7\frac{4}{11} - 5\frac{1}{10}}{4\frac{1}{3} \text{ of } 2\frac{1}{5}}$$

6. If copper is mixed with 20 per cent. of its weight of nickel, what per cent. of the mixture is nickel?

7. Find the interest on $960 from March 5, 1882, to Sept. 25, 1888, at 7 per cent.

8. Which is the better to buy flour at $8 per barrel on 6 months' credit, or at $7.50 cash, money being worth 6 per cent?

9. What will be the cost of plastering the walls and ceiling of a room 27 feet 4 inches long, 20 feet wide, and 12 feet 6 inches high, at 27 cents per square yard, if 20 square yards be deducted for doors, windows and baseboard?

10. A farmer sowed 5 bushels, one peck, 1 quart of seed, and harvested

from it 103 bushels, 3 pecks, 5 quarts. How much did he raise from a bushel of seed?

Entrance Examination in History, September 13, 1893.

1. When, where and by whom was America discovered?
2. Name four prominent statesmen before the Revolution, and tell all you can about them.
3. Give the causes of the Revolutionary War.
4. In what other wars did the United States engage before 1860, and for what reasons?
5. What is meant by the Missouri Compromise and the Monroe Doctrine?
6. Name the causes of the late Rebellion.
7. Name three important battles of the Rebellion.
8. Who were the leading generals—Union and Confederate—in the late war?
9. Who was the Union, and who the Confederate President during the Rebellion?
10. Name the Presidents elected since the late war. State whether they have been Democrats or Republicans, and how many terms they have served.

Entrance Examination in Geography, September 13, 1893.

1. What are the circles of the earth?
2. What are the meridians?
3. Define latitude and longitude.
4. What two meridians bound the hemispheres?
5. Define the two principal forms of government.
6. Bound North America and describe its political divisions.
7. Why is the climate of Western Europe different from that of America in similar latitudes?
8. Describe the mountains, principal rivers and lakes of North America.
9. Describe the natural routes of commerce.

Entrance Examination in English, September 13, 1893.

1. Name the parts of speech and give an example of each.
2. Compare the adjectives good, bad, pleasant, awkward and beautiful.
3. Illustrate the difference between transitive and intransitive, regular and irregular verbs.
4. Give the principal parts of lie, lay, sit and set. Write four sentences containing forms of the above verbs correctly used.

5. Re-write the following selection, using capitals and marks of punctuation as they may be needed:—

as i lie here wrote helen jackson while waiting for death nothing looks to me of any value except the words i have spoken for the indian. i did not write ramona said the great heart it wrote itself the heart had been consecrated and the work followed let this ramona school in this time honored city be consecrated with the wealth of full hearts and hands and the good result must follow.

6. Write a short composition on either of these two subjects:

a—A Day's Fishing.

b—What I know about cooking.

EXPENSES.

Expenses at the college will be as follows: Tuition free to Rhode Island pupils; table board at $3.00 per week; necessary text books, fuel and lights at cost; physical laboratory expense for breakage, if the student is ordinarily careful, $1.00 per term; chemical laboratory charges, $3.00 for chemicals during each term of qualitative analysis; in the shops, $1.00 per term for the use of tools; room rent, $5.00 per annum, or $2.00 per term; gas, an average of $1.15 per term. Students are required to furnish their own furniture and bedding. The only other expense will be for heavy laundry work, 50 cents a dozen, two cents each for collars and cuffs. All clothing should be distinctly marked. Packages sent the students by express or freight in care of the college, may be taken from the station to the college free of charge. Once at the beginning and end of each term a team will go to the station to take or bring trunks and other baggage. If the student desires aid in procuring his furniture, such aid will be given by the President, for whom special rates are made by the dealers. Graduates will pay the cost of diplomas, $5.00. No diplomas will be issued till the candidate has paid all term bills. Day students are required to deposit $10 per term in advance, and boarding students must either pay term bills in advance, deposit $50 or give bond for $100, to insure the payment of all bills. No bond will be accepted from any member of the faculty.

LABOR.

All class work exercises will be made educative, and treated the same as laboratory work in any other branch of instruction. If a young man comes here proficient in the practical agriculture as taught at our class work, the professor of agriculture may excuse him from that work, being convinced after examination of the student that he is proficient. Agriculture, both practical and theoretical, has the same dignity in our course that chemistry or any other study has; a student will be excused from laboratory work or theoretical work of any branch in which he can pass a satisfactory examination, and the extra time allowed him for some other line of study. The labor of the students in the carpenter shop and at iron work is a part of their instruction, and is not paid for unless special arrangements be made with the professor in charge. Class work on the farm may be paid for at the price set by the professor of agriculture. All extra work outside of the required hours of labor is paid for when the student is employed by the superintendent in charge.

SELF SUPPORT.

Labor may be furnished to those students who are desirous of assisting themselves. There will be work about the buildings, on the farm, at the Experiment Station, and in the laboratories; much of this can be performed by the students.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day, unless otherwise excused by the excusing officer.

DEPORTMENT.

Our rule for the guidance of the conduct of the young men is to be gentlemen. Students who do not understand the elements of gentlemanly conduct will not contine to be members of our institution. Negligence or absence from class duties of any kind will be vigorously opposed. All pupils wishing to be absent should obtain an excuse from the excusing officer beforehand. Excuses to go home during term time must be requested in advance in writing by the parents or guardians. Excuses from college exercises will not be granted when the pupils desire to go home merely for pleasure. Three unexcused absences occuring on three different days during one term, dismiss the pupil from the institution.

LOCATION.

We have an excellent location on the hillside, which furnishes us with rapid drainage and a delightful view. We are less than two miles from the railroad station. A macadamized road leads from our grounds to the station, insuring us at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with eighteen trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

STUDENTS.

SENIORS.

NAME.	RESIDENCE.	
Adams, Geo. E	Rocky Brook,	R. I
Ammonds, Geo. C.	Kingston,	"
Burlingame, Geo. W	Glocester,	"
Clark, Helen M	Kingston,	"
Madison, Warren B.	East Greenwich,	"
Mathewson, Ernest H	Providence,	"
Peckham, Reuben W.	Middletown,	"
Rodman, Geo. A.	Mooresfield,	"
Sargent, Chas. L.	Peace Dale,	"
Slocum, Samuel W	Peace Dale,	"
Spears, John B.	Foster Centre,	"
Sweet, Stephen A.	Slocumville,	"
Tucker, Geo. M.	Prudence Island,	"
Wilbur, Robert A.	West Kingston,	"

JUNIORS.

Albro, Lester F.	Middletown,	R. I
Browning, Elisha H.	Narragansett Pier,	"
Burdick, Howland	Newport,	"
Clarke, Chas. S.	Jamestown,	"
Hammond, John E.	Jamestown,	"
Kenyon, Elisha R.	Green Hill,	"
Oatley, Lincoln N.	Peace Dale,	"
Rathbun, Nathan C	La Fayette,	"
Scott, Arthur C.	Summit,	"

Sharpe, Russell V	**East Greenwich,**	**R. I.**
Spink, Bessie E	**Wickford,**	“
Tefft, Jesse C	**Jamestown,**	“
Winsor, B. E	**Summit,**	“

SOPHOMORES.

Barton, Benjamin	East Greenwich,	R. I.
Brayton, Chas. A	Fiskeville,	“
Clarke, Matthew W	Kingston,	“
Greenman, Adelaide M	Narragansett Pier,	“
Kenyon, Albert L	Point Judith,	“
Moore, Nathan L. C	Shannock,	“
Tabor, Edgar F	Slatersville,	“
WILLIAMS, JAMES E	**Summit,**	**R. I.**

FRESHMEN.

Capwell, Chas. W	South Scituate,	R. I.
Grinnell, Archie F	Middletown,	“
Hoxsie, Bessie B	Quonochontaug,	“
Kenyon, Chas. F	Shannock,	“
Marsland, Louis H	Susquehanna,	Pa.
Nelson, George	Peace Dale,	R. I.
Newton, Willis B	Washington,	“
Oatley, Geo. N	Peace Dale,	“
Tefft, E. Alice	Allenton,	“
Thomas, Irving	La Fayette,	“
Tucker, Lucy C	Prudence Island,	“

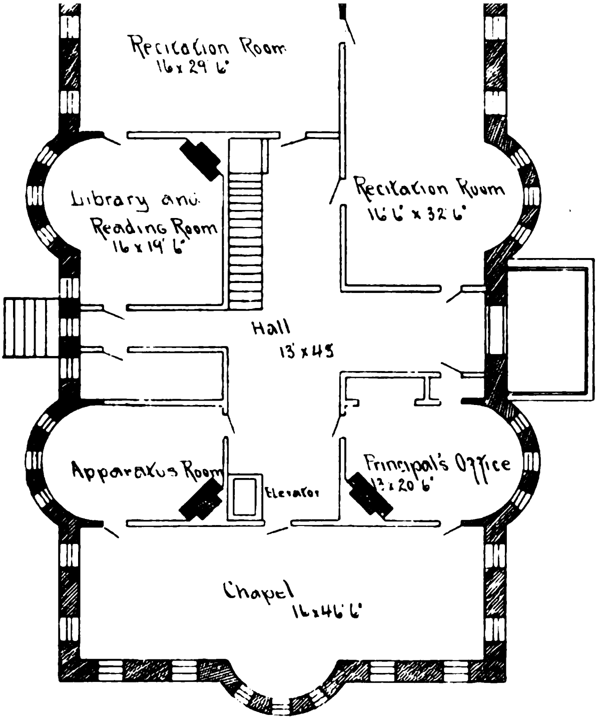
SPECIALS.

Arnold, C. T	Lonsdale,	R. I.
Barber, Annie E	Kingston,	“
Braman, B. E	West Kingston,	“
Brown, May	Narragansett Pier,	“
Burgess, Geo. F	Rockland,	“
[illegible]well, Howard M	Narragansett Pier,	“
	West Kingston,	“

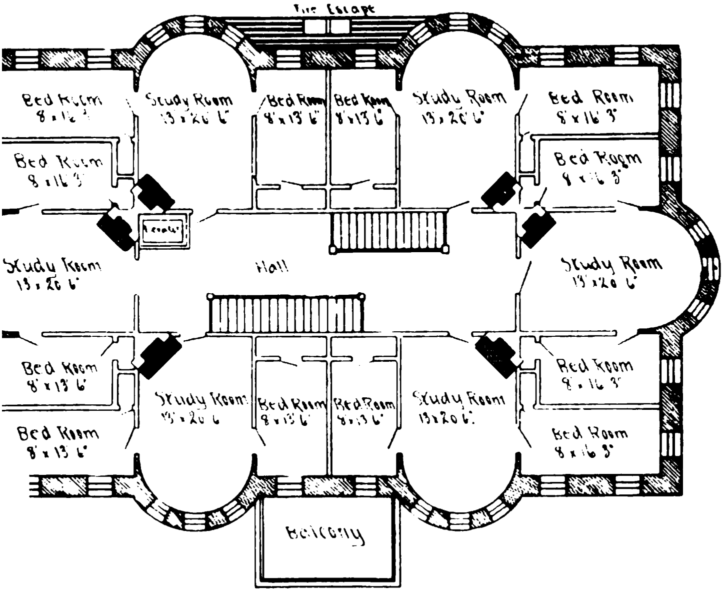
Cochrane, Geo. W	Franklin,	Mass.
Crandall, Henry C	Green Hill,	R. I.
Champlin, Frank E	Matunuc,	"
Eldred, Mabel D.	Kingston,	"
Eldred, Vernon	Wickford,	"
Greene, Lulie L	Carolina,	"
Hamblen, J. F	Carolina,	"
Hartwell, Chas. A	Littleton,	Mass.
Healy, Frederick C	Allenton,	R. I.
Knowles, John F	Kingston,	"
King, Ruth E.	Kenyon,	"
Magill, Arthur R	Newport,	"
Peckham, J. A.	Middletown,	"
Peckham, W. E.	Little Compton,	"
Rathbun, W. S.	Peace Dale,	"
Rhodes, Burnside	Kingston,	"
Saunders, Nellie F.	Carolina,	"
Taber, Herbert E.	West Kingston,	"
Tabor, William H	Slatersville,	"
Wright, Silas W	Wakefield,	"
Willis, L. Winnifred	Kingston,	"
Whitford, John T	Perryville,	"

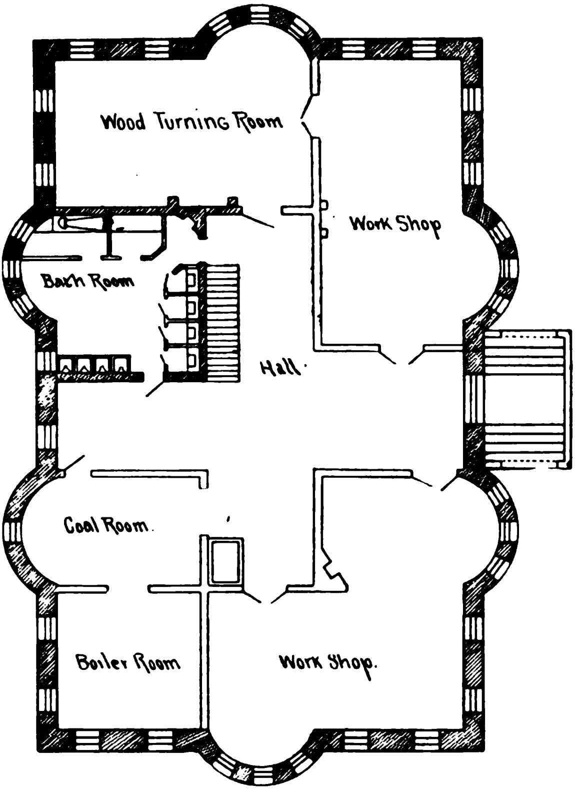
Eight students not counted above have taken instruction in wood-carving and drawing.

Total eighty-two.

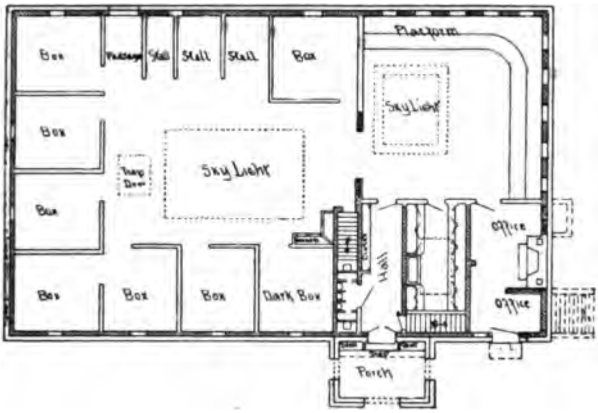


FIRST FLOOR PLAN OF COLLEGE HALL.

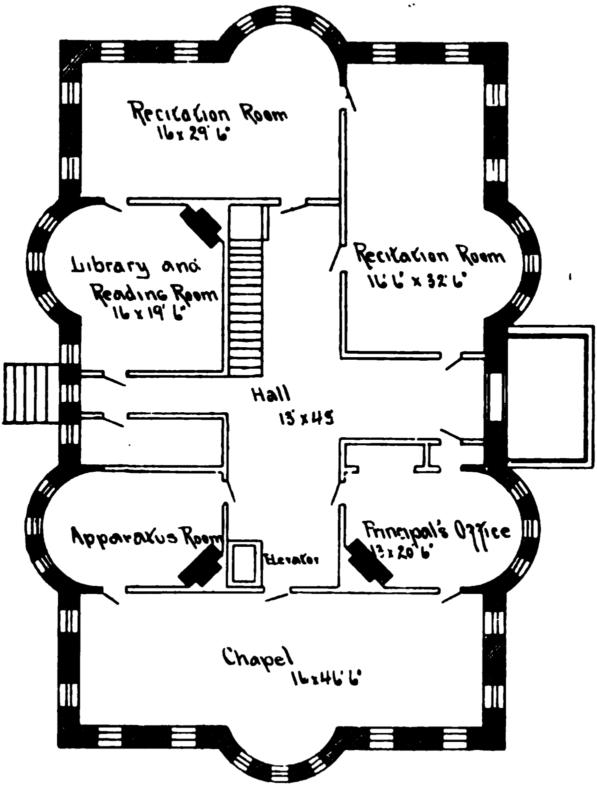




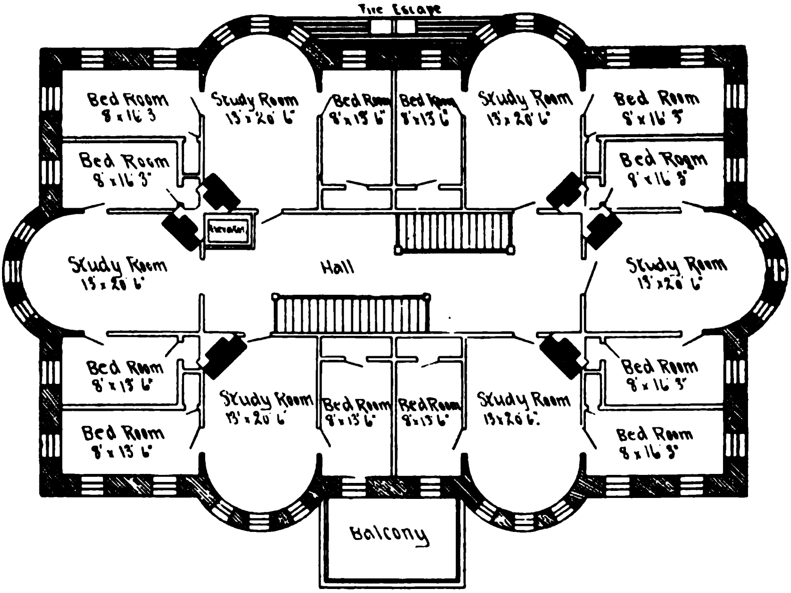
BASEMENT PLAN OF COLLEGE HALL.



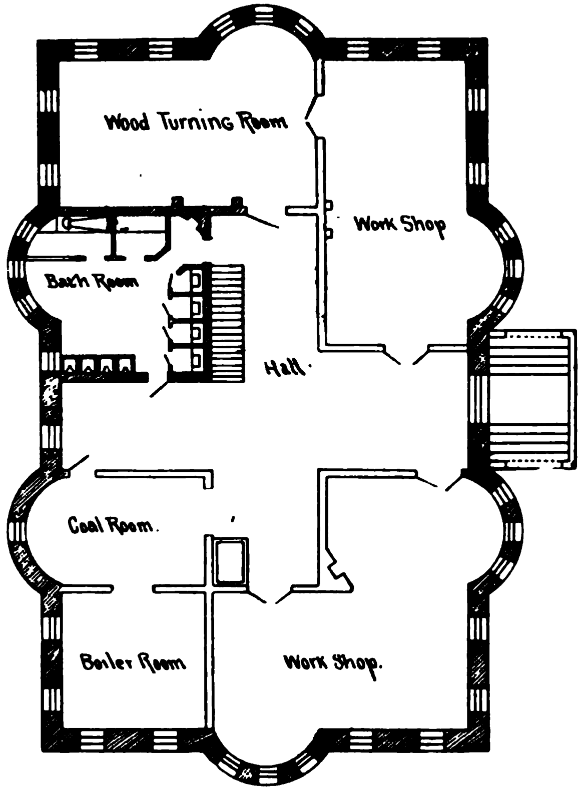
FLOOR PLAN OF VETERINARY HOSPITAL.



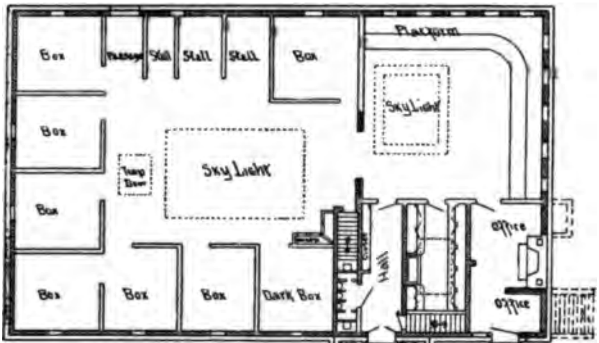
FIRST FLOOR PLAN OF COLLEGE HALL.



SECOND, THIRD AND FOURTH FLOOR PLAN OF COLLEGE HALL.
Showing size and arrangement of Students' Rooms.



BASEMENT PLAN OF COLLEGE HALL.



FLOOR PLAN OF VETERINARY HOSPITAL.

REPORT OF THE TREASURER.

Melville Bull, *Treasurer, in account with the* **Rhode Island College of Agriculture and Mechanic Arts.**

1893.	Dr.		
Jan. 1.	To cash balance on hand		98
Dec. 31.	State of Rhode Island	$20,000	00
	J. H. Washburn, President, for students' board, books, stationery, &c.	4,275	65
	Cash received from interest	56	85
	" " incidentals	1	50
		$24,334	98

1893.	Cr.		
Dec. 31.	By Salaries	$10,145	19
	Apparatus	436	73
	Library	369	38
	Postage, stationery and printing	580	16
	Freight and express	302	57
	Travelling	87	97
	Tools and machinery	593	16
	Labor	1,988	75
	Store	333	61
	Furniture	745	11
	*Incidentals	2,473	77
	Laboratory supplies	1,833	06
	Construction and repairs	1,807	90
	Provisions	1,845	13
	Boarding expense	743	26
	Cash balance on hand	49	23
		$24.334	98

This is to Certify that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of forty-nine dollars and twenty-three cents, (49\frac{23}{100}$).

C. H. COGGESHALL,
NATHAN D. PIERCE, JR.,
CHAS. O. FLAGG,
Auditing Committee.

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* Includes cost of fuel and gasolene.

College of Agriculture
and
Mechanic Arts.

Kingston, R. I.

1895.

Seventh Annual Report

OF THE

CORPORATION, BOARD OF MANAGERS

OF THE

R. I. College of Agriculture and Mechanic Arts,

MADE TO THE

GENERAL ASSEMBLY,

AT ITS

JANUARY SESSION, 1895.

PROVIDENCE:
E. L. FREEMAN & SON, PRINTERS TO THE STATE.
1895.

Rhode Island College of Agriculture and Mechanic Arts.

CORPORATION.

Hon. MELVILLE BULL	Newport County.
Hon. C. H. COGGESHALL	Bristol County.
Hon. CHAS. J. GREENE	Washington County.
Hon. NATHAN D. PIERCE, Jr.	Kent County.
Hon. GARDINER C. SIMS	Providence County.

OFFICERS OF THE CORPORATION.

Hon. C. H. COGGESHALL, President	P. O., Bristol, R. I.
Hon. CHAS. J. GREENE, Clerk	P. O., Kenyon, R. I.
Hon. MELVILLE BULL, Treasurer	P. O., Newport, R. I.

REPORT.

To His Excellency D. Russell Brown, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1895:

I have the honor herewith to submit the Seventh Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

Since our last annual report the controversy over the Morrill Fund, so called, has been happily settled. The following is the full text of the resolution of settlement passed at the January Session of the General Assembly, A. D. 1894, and the agreement following said resolution:

State of Rhode Island and Providence Plantations.

JANUARY SESSION, A. D. 1894.

RESOLUTION FOR SETTLEMENT WITH BROWN UNIVERSITY.

WHEREAS, Controversies exist between the State and Brown University respecting the Agricultural School Funds, so called, viz: the fund of fifty thousand dollars now in the possession of Brown University, being the proceeds of the sale of the land scrip issued to this State under the Act of Congress approved

July 2d, 1862, entitled "An act donating public lands to the several States and Territories which may provide Colleges for the benefit of Agriculture and the Mechanic Arts," and the moneys now in the State Treasury heretofore received, and the moneys which shall be hereafter received by, or shall hereafter accrue to, this State, under the Act of Congress, approved August 30th, 1890, entitled "An act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of Agriculture and the Mechanic Arts established under the provisions of an Act of Congress, approved July second, eighteen hundred and sixty-two," and respecting the latter of which funds said University now has its bill in equity pending on appeal in the Supreme Court of the United States:

THEREFORE, For the amicable adjustment of said controversies,

Resolved, That the General Treasurer be and hereby is authorized and instructed to pay to the Treasurer of Brown University, for the general uses of said University, the sum of forty thousand dollars, out of any moneys in the treasury not otherwise appropriated, whenever said University shall repay to him for the State, to be held under said act of Congress of July 2d, 1862, the said sum of fifty thousand dollars, and shall dismiss (without costs), its said bill in equity, and shall execute under its seal, and deliver to him, its obligations to the State, releasing and discharging all its claims of every nature upon the State, whether arising from the location and sale of the lands under said land scrip, or otherwise, and all its claims to or upon the said moneys heretofore received, and that shall be hereafter received by, or that shall hereafter accrue to this State under said act of Congress of August 30th, 1890; and agreeing, at its own expense, to continue in the enjoyment of their respective scholarships, until they respectively either graduate or otherwise leave college, all students in said University holding State scholarships on the first day of May, 1894; the General Treasurer and Secretary of State being then also hereby authorized and instructed to execute, under the seal of the State, and deliver to said University, the State's release to, and discharge of, said University from all further claims, obligations and liabilities in respect of said original fund of fifty thousand dollars, or the income thereof, particularly from all obligations assumed by said University under or pursuant to the resolutions of the General Assembly passed at its January Session, 1863, entitled "Resolutions assigning to Brown University the land scrip granted by the United States to the State of Rhode Island for the establishment of an Agricultural College," except the obligation to continue the State scholarships as aforesaid.

And this resolution shall go into effect immediately upon its passage.

AGREEMENT.

WHEREAS, the General Assembly of the State of Rhode Island and Providence Plantations at its January Session, A. D. 1894, did April 19, A. D. 1894, pass a resolution entitled "Resolution for Settlement with Brown University," a copy of which resolution is hereto annexed marked Exhibit "A" and is made a part of these presents; and

WHEREAS, the Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation commonly known as Brown University and being the Brown University spoken of in the above mentioned resolution had previously by its corporate votes, copies of which are hereto annexed marked exhibit "B" and made a part of these presents, appointed a committee consisting of its president, Elisha Benjamin Andrews; its chancellor, William Goddard, Thomas Durfee, Francis A. Gaskill, Oscar Lapham, Robert I. Gammell and Arnold Green, to consider, arrange, act upon and conclude in behalf of Brown University all the matters and controversies in said resolution mentioned and alluded to, and by its action to bind the said Brown University; and

WHEREAS, the bill in equity brought by the said Brown University and mentioned in the said resolution has been, as in said resolution provided, dismissed without costs; and

WHEREAS, the general treasurer of the State of Rhode Island and Providence Plantations has received from the treasurer of said Brown University the sum of fifty thousand dollars spoken of in said resolution; and

WHEREAS, the treasurer of Brown University has received from the general treasurer of the State of Rhode Island and Providence Plantations the sum of forty thousand dollars spoken of in said resolution; now,

THEREFORE, to carry out the purposes and directions of said resolutions these presents witness:

THAT Arnold Benjamin Chace in his capacity of treasurer of said Brown University acknowledges having received from Samuel Clark, general treasurer of the State of Rhode Island and Providence Plantations, the said sum of forty thousand dollars spoken of in said resolution.

THAT Samuel Clark in his capacity of general treasurer of the State of Rhode Island and Providence Plantations, acknowledges having received from Arnold B. Chace, treasurer of said Brown University, the said sum of fifty thousand dollars spoken of in said resolution.

THAT the Trustees and fellows of Brown University in Providence in the

State of Rhode Island and Providence Plantations, a corporation under its corporate seal by its committee hereinbefore named, hereby releases and discharges to the State of Rhode Island and Providence Plantations all its claims upon said State of every nature whether arising from the location and sale of the lands under the land scrip mentioned in said resolution or otherwise and all its claims to or upon the moneys heretofore received and that shall be hereafter received by or that shall hereafter accrue to the State of Rhode Island and Providence Plantations under the Act of Congress of August 30, 1890, mentioned in said resolution.

THAT the Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation under its corporate seal by its committee hereinbefore named also agrees and covenants to and with the state of Rhode Island and Providence Plantations at its own expense to continue in the enjoyment of their respective scholarships until they respectively graduate or otherwise leave college all students in said Brown University holding State scholarships on the first day of May, A. D. 1894.

THE foregoing releases, discharges, agreements and covenants being made in consideration of the payment made to the treasurer of Brown University by the general treasurer of the State of Rhode Island and Providence Plantations of the forty thousand dollars hereinbefore and in said resolution mentioned and of the releases and discharges hereinafter contained.

THAT the State of Rhode Island and Providence Plantations under its seal by Samuel Clark, its general treasurer, and George H. Utter, its secretary of state, acting under and by the authority of said resolution whereby they are for this purpose empowered, hereby releases and discharges said Trustees and fellows of Brown University in Providence in the State of Rhode Island and Providence Plantations, a corporation commonly known as Brown University, it and its successors of and from all further claims, obligations and liabilities in respect of the original fund of fifty thousand dollars in said resolution mentioned and the income thereof particularly from all obligations assumed by said University under or pursuant to the resolutions of the General Assembly passed at its January Session, A. D. 1863, entitled "Resolutions assigning to Brown University the land scrip granted by the United States to the State of Rhode Island for the establishment of an agricultural college" except the obligation to continue the State scholarships as aforesaid.

IN TESTIMONY WHEREOF, these presents are this Eighteenth day of May, Anno Domini, Eighteen Hundred and Ninety-Four, signed, executed and interchanged in two originals by and between the State of Rhode Island and Providence Plantations and the Trustees and fellows of Brown University in Providence in

the State of Rhode Island and Providence Plantations, a corporation comm
known as Brown University.

The Trustees and fellows of Brown Unive
in Providence in the State of Rhode I
and Providence Plantations, by

SEAL OF
THE
UNIVERSITY.

COMMITTEE

Elisha B. Andrews,
President of Brown Unive
William Goddard,
Chancellor of Brown Unive
Thomas Durfee.
Francis A. Gaskill.
Arnold Green.
Robert I. Gammell.
Oscar Lapham.
Arnold B. Chace,
Treasurer of Brown Unive

SEAL OF
THE STATE.

Samuel Clark,
General Treasurer of the State of Rhode Island
Providence Plantations
George H. Utter,
Secretary of the State of Rhode Island and P
dence Plantations.

EXHIBIT A.

[This consists of the Resolution printed above.]

EXHIBIT B.

[This consists of a copy of that part of the records of the corporation of B
University creating and authorizing the Committee of seven whose names a
at the end of the above agreement.]

The Morrill Fund is now available and is being used fo
support of the Rhode Island College of Agriculture and Mech
Arts, in accordance with the laws of the State. The State is
relieved of the greater part of the expense attending the same

REPORT OF THE TREASURER.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

1893.	DR.		
Jan. 1.	To cash balance on hand		98
Dec. 31.	State of Rhode Island	$20,000	00
	J. H. Washburn, President, for students' board, books, stationery, &c.	4,275	65
	Cash received from interest	56	85
	" " incidentals	1	50
		$24,334	98

1893.	CR.		
Dec. 31.	By Salaries	$10,145	19
	Apparatus	436	73
	Library	369	38
	Postage, stationery and printing	580	16
	Freight and express	302	57
	Travelling	87	97
	Tools and machinery	593	16
	Labor	1,988	75
	Store	333	61
	Furniture	745	11
	*Incidentals	2,473	77
	Laboratory supplies	1,833	06
	Construction and repairs	1,807	90
	Provisions	1,845	13
	Boarding expense	743	26
	Cash balance on hand	49	23
		$24,334	98

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of forty-nine dollars and twenty-three cents, ($$49\frac{23}{100}$).

C. H. COGGESHALL,
NATHAN D. PIERCE, JR.,
CHAS. O. FLAGG,
Auditing Committee.

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* Includes cost of fuel and gasolene

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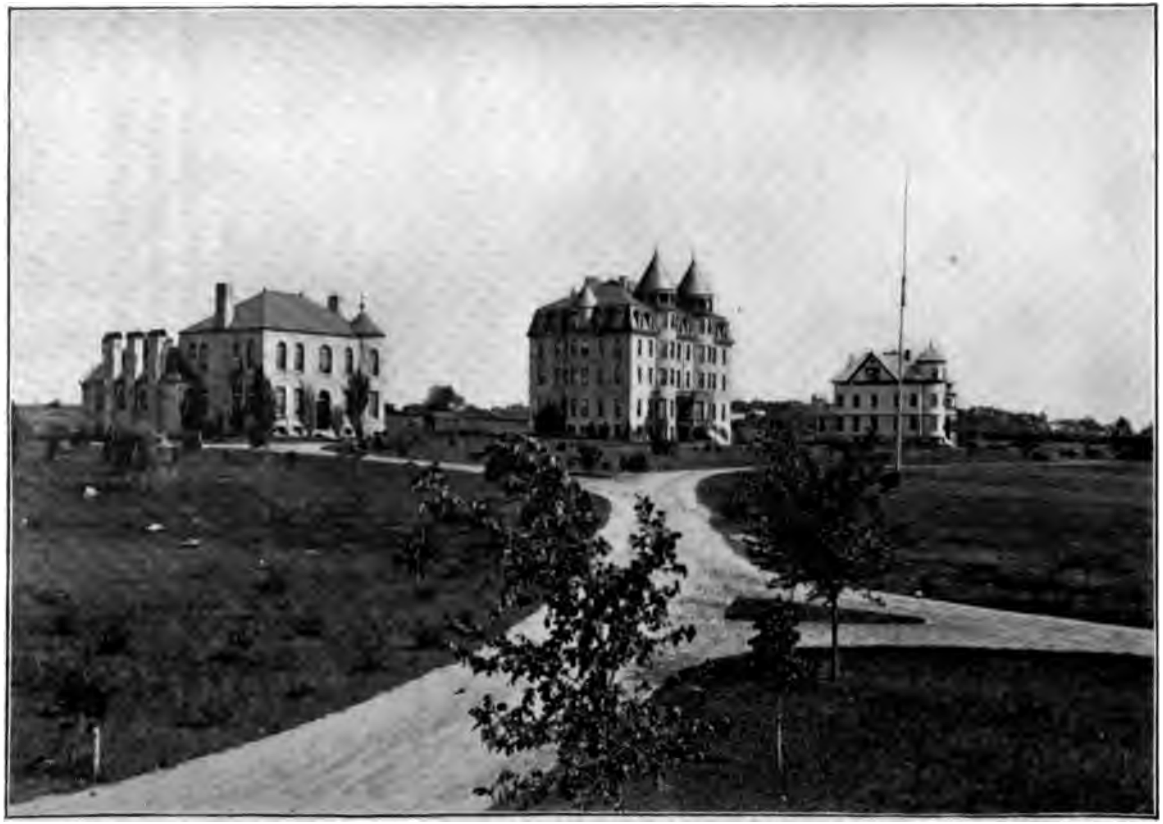

CHEMICAL LABORATORY. COLLEGE HALL. DINING HALL.

COLLEGE CALENDAR.

1896.

WINTER TERM.

January ~~2,~~ 13 8:30 A. M. .... Term begins.
January 31 .... Day of Prayer for Colleges.
February 22 .... Washington's Birthday.
~~March 29~~ April 3 .... Term ends.

SPRING TERM.

April ~~9~~ 13, 8:30 A. M. .... Term begins.
——— ——— .... Arbor Day.
May 30 .... Memorial Day.
June ~~4.~~ 11 .... Senior Examinations begin.
June ~~7,~~ 15 10 A. M. .... Entrance Examination.
June ~~16.~~ 21 .... Baccalaureate Sunday.
June ~~18.~~ 23 .... Commencement.

FALL TERM.

September ~~10,~~ 15 10 A. M. .... Entrance Examination.
September ~~11,~~ 16 8:30 A. M. .... Term begins.
——— ——— .... Thanksgiving Day.
December ~~24.~~ 23 .... Term ends.

~~1896.~~

WINTER TERM.

~~January 8.~~ .... Term begins.

FACULTY.

JOHN HOSEA WASHBURN, PH. D.,
PRESIDENT,
Professor of Chemistry.

CHARLES OTIS FLAGG, B. SC.,
Professor of Agriculture.

LORENZO FOSTER KINNEY, B. SC.,
Professor of Horticulture.

HOMER JAY WHEELER, PH. D.,
Professor of Geology.

ANNE LUCY BOSWORTH, B. SC.
Professor of Mathematics.

ESSIE JOSEPHINE WATSON, A. M.,
Professor of Languages.

WILLIAM ELISHA DRAKE, B. SC.,
Professor of Mechanical Engineering.

OLIVER CHASE WIGGIN, M. D.,
Professor of Biology.

WILLIAM WALLACE WOTHERSPOON,
Captain of 12th Infantry,
Professor of Military Science and Tactics.

HARRIET LATHROP MERROW, M. A.,
Professor of Botany.

JAMES DE LOSS TOWAR, B. SC.,
Associate Professor of Agriculture.

THOMAS CARROLL RODMAN,
Instructor in Woodwork.

FACULTY.

FREDERICK ATHERTON LANE,
Assistant Instructor in Woodwork.

MARY POWELL HELME,
Instructor in Drawing.

ANNA BROWN PECKHAM, A. B.,
Instructor in Languages and History.

WILLIS THOMAS LEE, Ph. B.,
Instructor in Chemistry and Physics.

SAMUEL CUSHMAN,
Lecturer on Bee-Keeping.

WARREN BROWN MADISON, B. Sc.,
Assistant in Horticulture.

GEORGE CLARENCE AMMONDS, B. Sc.,
Assistant in Mechanics.

GEORGE ALBERT RODMAN, B. Sc.,
Assistant in Mechanics.

SAMUEL WATSON SLOCUM, B. Sc.,
Assistant in Mechanics.

JOHN FRANKLIN KNOWLES, B. Sc.,
Assistant in Mechanics.

ROBERT ARTHUR WILBUR, B. Sc.,

EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D.	President of the College.
CHAS. O. FLAGG, B. Sc.	Director and Agriculturist.
H. J. WHEELER, Ph. D.	Chemist.
L. F. KINNEY, B. Sc.	Horticulturist.
SAMUEL CUSHMAN	Apiarist and Poultry Manager.
J. D. TOWAR, B. Sc.	Assistant Agriculturist.
GEO. M. TUCKER, B. Sc.	Assistant Agriculturist.
B. L. HARTWELL, B. Sc.	Assistant Chemist.
C. L. SARGENT, B. Sc.	Assistant Chemist.
H. F. ADAMS	Farmer.
N. HELME	Meteorologist.
MISS A. R. FRENCH	Clerk.

The Experiment Station Council consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.

THE COLLEGE.

HISTORY.

IN 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and the Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating $15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded that had genuine agricultural and mechanical colleges. So great was the dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

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* See Bulletin No. 1 of the Experiment Station.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6).

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with $15,000, and continuing with a yearly increase of $1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Statutes, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis with an entirely new course of study.

On April 19, 1894, the Legislature passed an act authorizing the State Treasurer to pay Brown University the sum of $40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

GROWTH DURING 1894.

Forty new pupils have entered this year, and all the departments have received much help by the addition of new books and apparatus. Never before in the history of the institution have the departments had so promising a future or been in a condition to do so good work as at present. Professor Drake has been relieved from teaching physics, which allows him to devote all his time to mechanical engineering and machine-shop work. Mr. W. T. Lee department of horticulture and botany has been divided to allow Prof. Kinney more time to devote to elective courses in horticulture and Experiment Station work. Miss H. L. Merrow, from the University of Michigan, (first assistant in botanical laboratory), has been appointed professor in charge of the botanical department. Miss Anna B. Peckham has been appointed instructor in languages and history. The War Department has detailed Capt. William Wallace Wotherspoon professor of military science and tactics. This fills a long felt need in the institution. Mr. Nathaniel Helme has been appointed meteorologist to the College. The library has grown. There have been added during the past year about four thousand bound volumes and one thousand pamphlets. The selection of reference books is already excellent, but many more are needed.

REQUIREMENTS FOR ADMISSION.

The requirements for admission to the College are necessarily low, on account of the deplorable condition of our district schools. They embrace both an oral and written examination in arithmetic, geography, English grammar and United States history. Applicants for the regular course will find some knowledge of algebra of great assistance.

ADMISSION TO ADVANCED STANDING.

Graduates of high schools, and others who have had a sufficient amount of high school or college work, may enter in advance in any of the higher classes for whose work they are prepared.

OPPORTUNITIES OFFERED TO WOMEN.

There are no facilities for the boarding of young women at the College, since the number of applicants for an industrial education has not yet been sufficient to warrant the furnishing of special dormitory accommodations. Some young women, however, find accommodations elsewhere, and receive a part or the whole of the instruction given, substituting for agriculture, horticulture and mechanics, English, Latin, German, French, art and mathematics.

EXPENSES.

Expenses at the College are as follows: Tuition free to Rhode Island pupils; table board at $3.00 per week; necessary text books, fuel and lights at cost; physical laboratory expenses for breakage, if the student is ordinarily careful, $1.00 per term; chemical laboratory charges, $3.00 for chemicals during each term of qualitative analysis; in the shops, $1.00 per term for the use of tools; room rent, $5.00 per annum, or $2.00 per term; gas, an average of $1.50 per term. Students are required to furnish their own furniture and bedding. The only other expense is for heavy laundry work, 50 cents a dozen, two cents each for collars and cuffs. All clothing should be distinctly marked. Packages sent the students by express or freight in care of the College, will be taken from the station to the College free of charge. Once at the beginning and end of each term a team will go to the station to take or bring trunks and other luggage. If the student desires aid in procuring his furniture, such aid will be given by the President, for whom special rates are made by the dealers. Graduates pay the cost of diplomas, $5.00. No diplomas will be issued till the candidate has paid all term bills. Day students are required to deposit $10 per term in advance, and boarding students must either pay term bills in advance, deposit $50, or give bond for $100, to insure the payment of all bills. No bond will be accepted from any member of the faculty.

The labor of the students during class exercises, in the shops, at iron work, and in the horticultural and agricultural departments, is a part of their instruction, and is not paid for unless special arrangements be made with the professor in charge. All extra work outside of the required hours of labor is paid for when the student is employed by the superintendent in charge. A limited amount of labor may be furnished to those students who are desirous of assisting themselves. There will be work about the buildings, on the farm, at the experiment station, and in the laboratories. Much of this can be performed by the students.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day.

DEPORTMENT.

The rule for the conduct of the young men is, "Be a gentleman." Students who do not understand the elements of gentlemanly conduct will not continue to be members of the institution. Negligence or absence from class duties of any kind will be vigorously opposed. The following regulations concerning absences are rigidly enforced.

1. Students shall go to each professor or instructor for excuses in his or her department.
2. An application for an excuse shall be made, if possible, beforehand; if not, at the first recitation after the student's return; otherwise, the absence will be considered unexcused.
3. Every student shall be allowed each term ten per cent. of unexcused absences from recitations in each subject. No account will be taken of fractions.
4. An unexcused absence in excess of this number shall dismiss a student from the institution.
5. Attendance at Chapel exercises shall be treated like attendance upon any class, except that applications for excuses from the same must be made at the President's office on Tuesdays, at 8.40 A. M.

LOCATION.

The College is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles from the railroad station. A macadamized road leads from the grounds to the station, insuring at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with eighteen trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

GENERAL AND AGRICULTURAL CHEMISTRY.

WITH the new course of study, instruction in chemistry begins with the Sophomores' third term. It consists of lectures and recitations three hours per week, with laboratory work one afternoon per week. The same number of lectures and recitations is continued during the first term, Junior year, and the laboratory work consists of qualitative analysis two afternoons per week. During the second term, Junior year, organic chemistry is begun, consisting of lectures three hours pe week, and qualitative analysis is continued three afternoons pe week. During the third term, agricultural chemistry is taught b lectures four hours per week, and qualitative analysis three afte noons per week. The instruction in agricultural chemistry co sists of lectures and recitations with laboratory work upon artificial digestion, analysis of soils, fodders and fertilizers, milk butter and cheese, tests for poisons in the stomachs of differen animals, analysis of fruits for sugar, starch and albuminoids, an the study of chemical changes in soils. Instruction in inorgani chemistry comprises recitations and laboratory work upon Rem sen's advanced course in inorganic chemistry. Special illustra tions, however, are given in the line of agriculture, physiology an hygiene, for the purpose of making the chemistry of the farm an kitchen familiar to all. In the chemistry of the halogen com pounds, especial attention is given to photographic chemistry an manipulation, which prepares the students for a special course i

THE FARM BUILDINGS.

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photography, which may be taken as an elective branch in the study of chemistry.

Text books: Remsen's Inorganic Chemistry (advanced course), Remsen's Theoretical Chemistry, Remsen's Organic Chemistry, Orndorff's Laboratory Manual, Appleton's Qualitative and Quantitative Analysis.

The Freshman class study physical geography during the first term. They pay special attention to the scientific phases of it, to the chemistry and geology of the soils, the influence of air and water on the same; and much reading and time are expended on the flora and fauna of the different countries. Warren's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. Five hundred lantern slides illustrating ethnological subjects are projected and explained before the class. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

AGRICULTURE.

The term *Agriculture* is broad and comprehensive, including many of the sciences set apart as separate divisions in an agricultural college, where they are to be taught "in their relation to agriculture." The work of this division is intended to cover ground both practical and theoretical in agricultural knowledge, not included in other divisions, and to further impress upon the student the application of scientific principles to agriculture. The course for the first year is the same for both the agricultural and mechanical students, and aims to begin with such subjects as may be somewhat familiar to them and about which they have some elementary knowledge. The soil might quite properly be considered the correct starting-point for an agricultural course, but to study the soil intelligently requires some knowledge of chemistry, and should properly come at such a time in the course as to follow at least elementary instruction in that branch. The same is true of the use of fertilizers and the growth of plants, except that a knowledge of botany is essential in the latter.

One afternoon in each week of the first term of the Freshman year is devoted to the study of farm buildings, their location and convenience of arrangement; farm machinery, its use and care; a discussion of general and special farming with the arrangement of farm buildings and fields for the various kinds of farming, including the subject of fences and fencing. The third term is given to the subject of land drainage; the effect of water upon the soil and growing crops; tile and other methods of draining; how drains act and affect the soil; how to lay out a system of drains; draining-tools and their use; laying tile, silt basin, outlets and care of tile drains. A little time will be devoted to the history, value and cost of tile draining. Practical field work is given in laying out drains, leveling and preparing plans. The agriculture of the first term of the Sophomore year is assigned to the study of the breeds of live stock, horses, cattle, sheep and swine; the history, characteristics and value of each for various purposes, with practice in tracing pedigrees from herd records and the use of score cards in judging animals. For the study of animals, the stock of the College and Experiment Station as well as the herds of stock breeders in the vicinity are available. Two hours each week of the first term are given to the study of farm crops, their relation to the soil and stock of the farm, their relation to each other, rotations and the planting, cultivating and harvesting of the various crops generally grown. Two terms of the Junior year are given to the study of soils, manures and fertilizers. This includes the relation of water, heat, light and air to the soil as affecting plant growth and crop cultivation.

Some time is given to the careful study of the manures made upon the farm; their value, and the best course to pursue in handling them to prevent loss. Chemical and artificial fertilizers as plant food and as chemical agents in rendering inert material in the soil available to plants, receive the consideration due them.

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The text-books used thus far are as follows:—Draining for Profit and Health, Waring; Horses, Cattle, Sheep and Swine, Curtis; Agriculture, Storer; Stock Breeding, Miles; Feeding Animals, Stewart.

HORTICULTURE.

POMOLOGY. The course in pomology now offered embraces, 1. The identification of the standard kinds of fruits by means of an artificial key now being prepared here at the College; 2. A systematic study of the important characteristics of the various kinds of fruits that have been considered in making the classification; 3. Their history while under cultivation. There are now many kinds of orchard fruits grown upon the College grounds and it is proposed to add to these by grafting scions until as far as possible all the kinds of apples, pears, peaches, plums and cherries that are recognized by the American Pomological Association as being worthy of cultivation have a place in the garden.

In connection with the systematic study of the varieties of fruits, opportunity will be afforded for practical experience in the propagation and cultivation of the strawberry, raspberry, currant, gooseberry, and the grape, in addition to the orchard fruits already named.

MARKET GARDENING. Opportunity will be offered in this course for practical experience in the cultivation of celery, onions, beets, lettuce, cucumbers, etc., in the garden; and as soon as suitable glass structures are provided, lettuce, radishes and cucumbers will be grown under glass.

THE HORTICULTURAL DEPARTMENT.

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FLORICULTURE. This course will consist of a series of discussions on the propagation, cultivation and fertilization of the rose, carnation, violet, chrysanthemum, orchids, ferns and palms, together with practical exercises in the laboratory or greenhouse in preparing and setting hard and soft wood cuttings, and in budding, grafting, and layering. There will also be discussions on the arrangement of flowers when used either for exterior or interior decoration.

LANDSCAPE GARDENING. This course consists of discussions on the location of buildings, walks and drives, the laying out of lawns and the planting of them with appropriate trees, shrubs and flowers. In this course, a special study is made of the appearance of trees and shrubs due to the form of the branches, the size of the leaves and the color of the bark in winter. Opportunity is also offered for experience in moving large trees and making plans for planting private or public places.

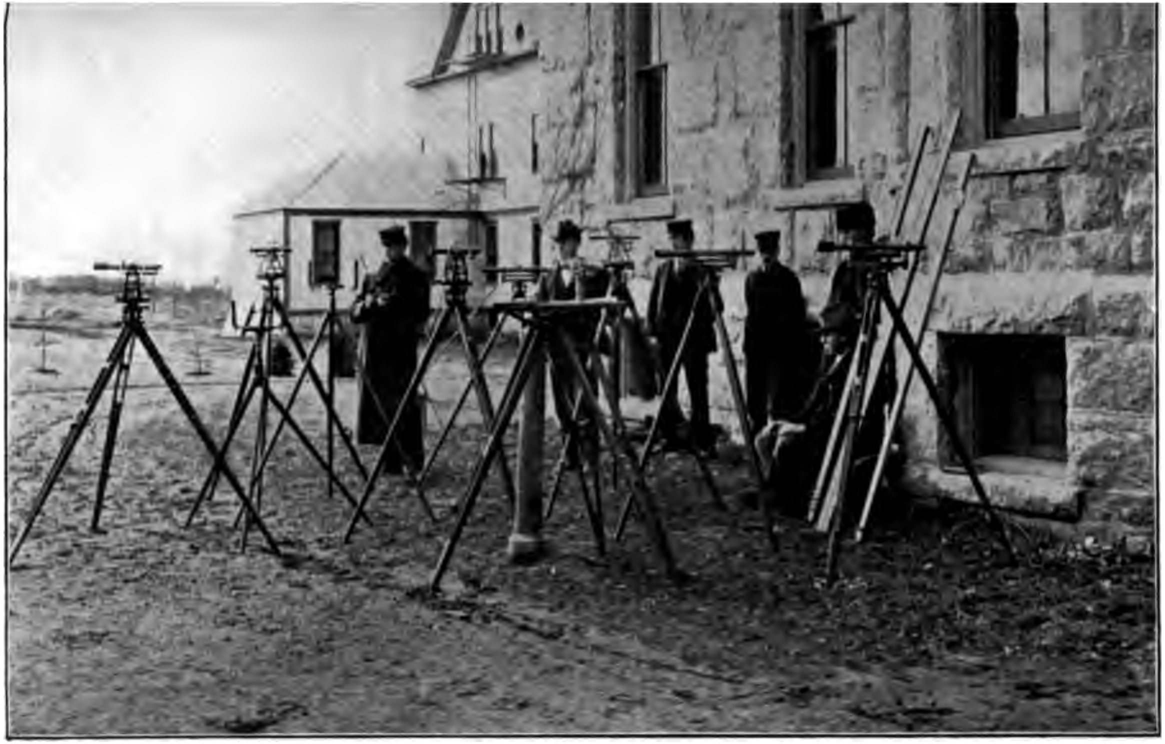
FORESTRY. This course consists of lectures only. Last year these were given by Professor B. E. Fernow, Chief of the Division of Forestry of the United States Department of Agriculture.

GEOLOGY.

The course in geology embraces structural, dynamical, historical and a brief review of physiographic geology. In connection with historical geology, the student is made familiar with, and taught to recognize some of the most characteristic fossils of the different formations, and is also taught the characteristic features of different divisions of mollusks by examination and study of recent and fossil shells. Especial attention is given in the course to such mineral constituents of rocks as are of importance in connection with the study of the origin of soils, and the changes and transformation which are continually in progress within them. In this connection, special effort is made to familiarize the student with the desirable mineral and physical features of soils as well as with those compounds the presence of which is undesirable or which may give rise to a greater or less degree of soil sterility. A thorough study of natural deposits of interest to agriculture is made; namely: of Chili salt-petre, potash salts and phosphates of various character. During the spring term, occasional excursions are made to places of geological interest, affording the student an opportunity to collect mineral and geological specimens, and to make for himself practical geological observations. These excursions also furnish a favorable opportunity for gaining an idea of the methods pursued in the preparation of geological and agricultural maps. During the past year a collection of characteristic rocks of the different geological formations and also one of two hundred mineral specimens, has been purchased. Some fine specimens of natural sodium nitrate from the World's Fair Exhibit have been presented by Joseph Harris, and a number of miscellaneous minerals have been donated by friends of the College. Several geographical maps, and charts of the Mississippi River Commission have also been added to the equipment for teaching. It is hoped to add soon a special collection of Rhode Island minerals and also a collection of fossils and recent shells. It is also proposed to secure additional slides for use in giving geological instruction by aid of a stereopticon.

MATHEMATICS AND ASTRONOMY.

The required work in mathematics extends through the first two years of the course for students in the agricultural department, and throughout the entire four years for those in the mechanical course. The time devoted to the subject in the Freshman year, is spent in the study of algebra and plane geometry. The work in algebra consists of a systematic drill in the fundamental operations, leading up to a study of the equation, both simple and quadratic, the theory of exponents, radicals, progression, the binomial formula, and the graphic representation of equations. Especial attention is given to the expression by means of equations, of the conditions of a problem, and the exact methods of



A DIVISION OF THE SURVEYING CLASS.

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reasoning involved. In the course in plane geometry, beginning with the third term, particular stress is laid upon the original demonstration of propositions, in order best to develop the rigidly logical methods of thought which are the outcome of exact geometrical work. Numerical problems and practical applications are given whenever possible. This course extends through the first term of the Sophomore year and is followed by a course in plane trigonometry during the winter term. The fundamental formulas are developed and application of them is made to the solution of right and oblique triangles. The subject of logarithms is studied and sufficient applications are made to thoroughly familiarize the student with this invaluable aid to computation. It is the aim here, as throughout the course, to select such problems and applications as shall have direct bearing upon practical subjects. Practical work in surveying is given during the spring term and this work is continued through the first term of the Junior year, by the agricultural students, while the mechanical students enter upon the subject of analytical geometry, studying first the nature and meaning of a locus and the analytical demonstration of many geometrical theorems, and later developing the simpler properties of the conics. A short course in descriptive geometry is also given during the first term. A one term course in solid geometry is given to the mechanical students, in which are studied the points, the line and plane in space, the familiar polyedrons, the cylinder, cone and space, including the measurement of these solid figures. The work in calculus begins with the second term of the Junior year and continues through three terms. It includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiations and the integration of simple forms illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for the integration of functions are studied and a

[illegible] of curve-tracing.
[illegible] the ensuing year,
[illegible] who have completed
[illegible] plane geometry: one in
[illegible] integral calculus, open,
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[illegible] in mathematics
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[illegible] shifted from the
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DEPARTMENT OF LANGUAGES.

The subjects grouped under this head are English, German, French, Latin, and history. The work in each is indicated below.

At the beginning of the fall term, Miss Peckham, a graduate of Wellesley College, succeeded Miss Williams as instructor in this department and has proved most efficient. She teaches English to the two lower classes, Latin, American and general history.

All efforts made to increase the facilities of this department have been furthered by the generous action of the Board of Managers. Busts and photographs will make the classroom more attractive, while the additions to the library in history and literature —English, French, and German—have quickened the interest of the students in these subjects and greatly enlarged the possibilities of the department. 1,455 volumes have been purchased, in the following proportion: English literature, 666; history and biography, 305; French and German literature, 484. Among these, may be mentioned Halliwell-Phillips's Outlines of the Life of Shakespeare, Furness's Variorum Edition of Shakespeare, Letters of James Russell Lowell, Correspondence of John Lothrop Motley, Morley's English Writers, Stedman and Hutchinson's Library of American Literature, the works of Hazlitt, Ruskin, Carlyle, De Quincey, Thackeray, George Eliot, Scott, Dickens, Arnold, Kingsley and Hawthorne, Winsor's Narrative and Critical History of America, Palfrey's History of New England, the works of Prescott and Parkman, The Story of the Nations Series, Lord's Beacon Lights of History, Duruy's History of Greece and History of Rome, Memoirs of Talleyrand, Memoirs of Prince Metternich, Von Sybel's Founding of the German Empire, Motley's Works, complete editions of Lessing, Goethe, Schiller, Heine, and Victor Hugo, also representative works of Freytag, Spielhagen, Ebers, Auerbach, Dahn, Heyse, George Sand, Balzac, Dumas, and Daudet. Among works of reference, may be noted Larned's History for Ready Reference, Chambers' Encyclopædia, Johnson's Universal Cyclopedia. The Iconographic Encyclopedia. Grimm's Deutsches Woerterbuch. Littré's Dictionnaire de la Langue Française.

It is gratifying to note from year to year an improvement in scholarship on the part of the students in this department. They seem to understand now better than ever before the value and necessity of language work.

ENGLISH.

English, comprising composition, rhetoric, and literature, is studied during the four years of the college course.

In the Freshman year, the work is largely elementary. In addition to the written exercises required of the students, there is a careful reading in the classroom of representative works by famous authors, principally American. The aim of this is the early development of a taste for good literature.

The study of American literature is continued in the Sophomore year, and the principles of rhetoric are then taught. Written work more advanced than that of the first year is also required.

The winter and spring terms of the Junior year are devoted to general English literature. English history is studied at the same time, as it is thought impossible to understand an author apart from his age. Individual research is encouraged, and will increase, it is hoped, from year to year. Some attention will also be paid to contemporaneous literature. As far as possible, entire works of the most noted authors are critically read in class. Exercises in composition give opportunity for detailed treatment of special topics. An elective in English literature is offered throughout the Senior year. The purpose of it is to supplement the general course of the preceding year. During 1894, the work was adapted to the needs of the first graduating class, and a special study was made of American literature. The present Seniors during the fall term read Arnold's Sohrab and Rustum, The Sir writing and declamations are required of the whole class. Three graduate students took work in English during the fall term.

GERMAN.

The study of this language is required during the Junior year, and is elective during the three terms of the Senior year. The experiment of using a text-book written in German with beginners has proved very successful. The language itself is made the medium of instruction, and the subject is taken up in grammar work, dictation, conversation, and translation—from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts. The advanced classes of 1894 have studied Schiller's Die Jungfrau von Orleans, Lessing's Minna von Barnhelm, a history of German literature and Freytag's Aus dem Staat Friedrichs des Grossen. During the fall term there were two graduate students in the German department.

FRENCH.

A change in the curriculum enables a student beginning French in the fall term of the Sophomore year to continue it during the last two years of his course, if he so desire. It is the aim of the department to make the instruction in this language similar to that given in German, with the expectation that the results will be greater in consequence of the additional year allotted to the subject. French, like German, is taught by means of grammar, conversation, dictation, translation, and composition. Progressive work throughout the three years will make it possible for the student at graduation to read with ease ordinary French, both literary and scientific.

LATIN.

During the year, Latin has been introduced into the curriculum as an elective. The course, of four years, will be similar to that of the best preparatory schools. It is felt that students taking Latin will be benefited not only by the reading of certain literary masterpieces, but that they will more readily comprehend the terminology of science, find modern languages less difficult, and gain a mental discipline that will be of value in all departments of study. That the new elective is appreciated, is indicated by the fact that twelve are studying it, among the number one graduate student.

HISTORY.

In the fall term of the Freshman year, a careful review is made of American history, followed in the other two terms by outline work in general history. The method is topical. No one text-book is used, but students are taught to consult various authorities and to report upon what they have read. In the Junior year, English history is studied in connection with English literature; and an elective for special historical work is offered throughout the Senior year.

TEXT-BOOKS.

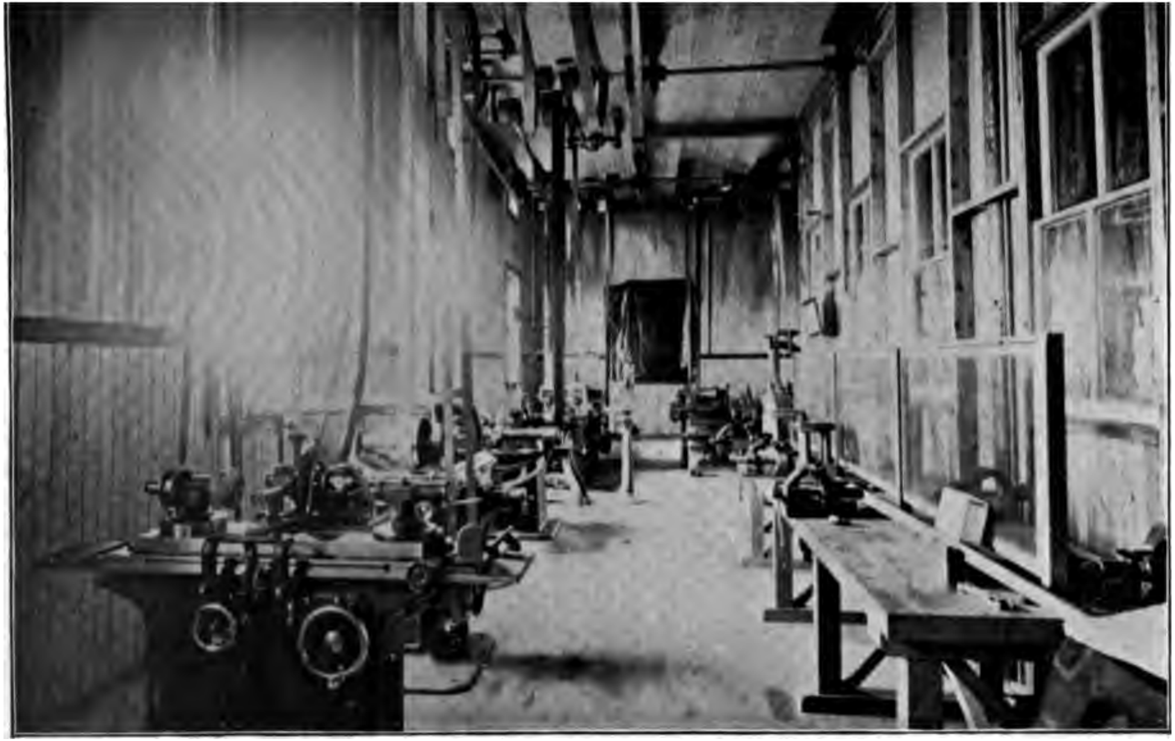
ENGLISH. Lessons in English, Lockwood; Familiar Talks on English Literature, Richardson; Many Texts of Authors from Chaucer to Longfellow; The Library.

GERMAN. Elementary German, Otis; German Reader, Joynes; Deutsches Sprach und Lesebuch, Bernhardt: Bilderbuch Ohne Bilder, Anderson: Unter dem Christbaum. Bernhardt; Minna von Barnhelm, Lessing; Die Jungfrau von Orleans, Schiller; Deutsche Litteraturgeschichte, Bernhardt.

FRENCH. Complete French Course, Chardenal; Petites Causeries, Sauveur; Contes de Fées, Joynes; Historiettes Modernes, Fontaine.

LATIN. Beginner's Latin Book, Collar and Daniells; Latin Grammar, Allen and Greenough; Cæsar, Allen and Greenough.

HISTORY. American History, Montgomery; General History, Myers; The Library.



MACHINE SHOP.

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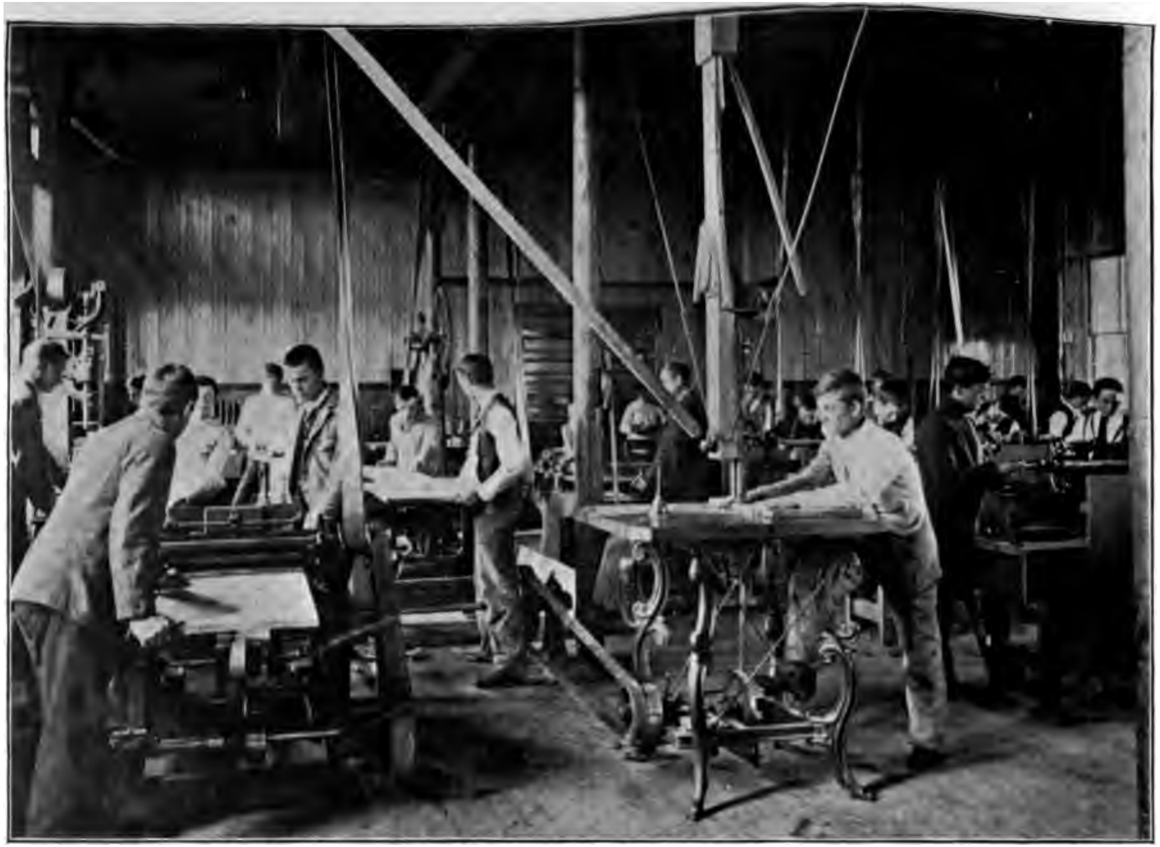
DEPARTMENT OF MECHANIC ARTS.

DURING the past year, the department of Mechanic Arts has made large additions to its outfit of tools and machinery, with the result that the College can now give instruction in mechanical branches comparable with that given by any institution in the country. While the College does not attempt to teach trades in any sense, yet the courses of shopwork that are offered are of the greatest value to those who may wish to learn a trade.

The students in the regular four years' course receive instruction in woodworking, forging, and in the machine shop. During the winter term, young men may enter the College and take work as special students in any of the above lines. Hand work as the cultivator of manual dexterity is emphasized from the beginning, and the use of machinery follows only when this skill in handwork has been acquired. The student is at all times under the direction of an instructor. Graded courses of work are used by all students alike, and the instruction is systematized in every possible way. An excellent course in woodworking has been prepared, its object being to give the student skill and confidence in working various kinds of wood, and also to impart a fair knowledge of the principles of building and construction. Bench-work, carpentering, wood-turning, pattern-making and cabinet-making are each taken up in turn under able instructors. A series of practical lectures upon the art of estimating the cost of various constructions of wood has just been prepared and is now being given to the agricultural students of the Sophomore year. The greatest need of this division of the Mechanic Arts department is more floor space. Twenty-five students at one time are now receiving instruction in a room and at benches that should accommodate no more than eighteen. This makes it very difficult to carry on uniform work and it is impossible to construct a piece of work of large size. During the first term of the Sophomore year, woodturning is taken. For this work, we now have thirteen lathes, and with each is a very complete set of turning-tools; such as chisels, gauges, chucks and calipers. In the same room are benches for pattern-making, which is given to students of the mechanical course during the second term of the Sophomore year. The wood-working division is also furnished with machinery as follows; double circular saw, surface planer, buzz planer, mortising-machine, doweling-machine, band saw, jig saw, sash and blind moulding-machine and others.

The wood-carving class becomes more popular every year. A small fee is charged to special students, and is used for the support of the reading-room. Students may arrange to buy the articles that they make in this or any other line of manual work by paying only the cost of the materials used. Bookcases, hand glasses, picture and mirror frames, chairs, paper knives and footstools are some of the articles made and carved.

A vast amount of work is accomplished by the wood-working division every year. During the past year, the mechanical building has been sheathed and finished throughout. The students have been employed also in building museum cases; erecting shafting and machinery; piping for boiler and engine connections and for steam blasting; installing a complete electric lighting plant; building lumber shed; ice house, 26 x 36; a gymna 22 x 37; and storm windows for College Hall and mecha



THE WOOD WORKING MACHINERY.

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THE CARPENTER SHOP.

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modate fifteen students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the necessary tools for complete work. A regular course is followed here in forging as well as in other lines, and large quantities of iron work useful about the farm are produced by the students of the agricultural course. The mechanical students follow a similar course, but in a direction more suited to the machine shop. Only the students in the mechanical course work in the machine shop. The work here is designed to give a sure knowledge and intelligent practice in the best modern methods of using various tools; such as lathes, planers, shapers, drills, milling-machine, universal grinder, and other machines. Hand work at the bench is taken up until the student shows some proficiency in the use of the file and chisel. In the machine shop, each pupil builds a complete machine before finishing the course.

As much time is given to engineering practice as is desirable at present. Among other things, students make actual tests of engines and boilers, and operate the machinery for testing iron and steel and cements. Considerable practice in mechanical drawing, running engines, and care of boilers is given during the course to all students alike. The department has recently purchased an agricultural engine and boiler, also a hoisting-engine, which will give additional opportunities for students to acquire experience in steam engineering. About one hundred and fifty books have been purchased as a nucleus for a library of mechanical engineering, and additions of desirable books will be made from time to time. We have received as gifts the following: two barrels of oil, together with samples of crude oils and their reduction products, from Mr. Charles M. Everest of the Vacuum Oil Co.; blue prints, photographs and framed cuts from Brown and Sharpe of Providence; samples of boiler coverings and asbestos, insulating materials from the agents of the H. W. Johns Co., Providence. It is hoped and requested that manufacturers in Rhode Island will send to the College samples of their products in both the raw and finished state, as well as drawings to show machinery used. This material will be used to form an industrial museum of Rhode Island products. In purchasing machinery, we buy in the State if possible, with the idea that at some future time the mechanical department of the College will become an index of the industries of Rhode Island.

MECHANICAL DRAWING.

The mechanical drawing is very closely related to the shop courses of work. Students receive their first practice in drawing the exercises they afterward make in the shops. The time given to the mechanical drawing is much too short to allow of any extended study of machine construction or design; and the course, therefore, consists chiefly of a presentation of the various principles involved in the more common forms of drawing and in the practice with the instruments necessary to insure a fair degree of accuracy in work. The division of mechanical drawing has never had suitable accommodations, and the need of a special and permanent location has never been greater than at present. Nevertheless, some progress has been made. An entirely new course has been arranged and additional models have been collected. It is expected that in the near future the mechanical drawing will move to ample quarters especially prepared for it, with boards, tables, and lockers. Thirty-two students received instruction during the past year. The course of study is as follows: (1) exercise sheet for pencil and drawing pen; (2) exercise sheet for compass; (3) orthographic projections; (4) lettering; (5) isometric drawing; (6) sketching and drawing from models; (7) study of bolts, nuts and screw threads; (8) practical descriptive problems; (9) perspective drawing; (10) machine drawing and sketching; (11) tracing and blue-printing; (12) architectural drawing.

THE PHYSICAL LABORATORY.

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PHYSICS.

The physical laboratory and recitation room is in the basement of College Hall. The apparatus room immediately adjoins the laboratory, and all the apparatus is now near at hand for convenient use. A quantity of new apparatus has been added during the past year, the section of electricity being prominently represented in the additions. A large storage battery of sixty cells has been put in, and this will furnish a constant current for electric lights and for experimental purposes. Mechanics and sound are taken up in the fall term; magnetism and electricity, in the winter term; while light and heat are studied during the spring term.

Students in physics have work in the laboratory each week in connection with their text-book study; but as the space for such practical work is limited, it is not possible to take up the laboratory work in accordance with the original method of teaching physics. The lectures upon the practical applications of electricity have been followed again this year with encouraging results.

A meteorological division has been opened this fall and an excellent set of self-recording instruments has been procured. The local weather forecast will be sent by our meteorologist to the newspapers of the State. The instruments now in position are one quadruple register, recording velocity and direction of the wind, hours of sunshine, and the rainfall; one self-recording barometer; one self-recording thermometer; one rain-gauge; one polymeter.

BIOLOGY.

There have been no changes in the studies pursued in this department since the last report. They are as follows:

First year—Elementary Anatomy and Physiology through the winter and spring terms.

Third year—Zoölogy through the fall term.

Fourth year—Advanced Anatomy and Physiology, Comparative Anatomy, Comparative Physiology and Microscopic Anatomy through the entire year; Veterinary Science during the winter term; Constitution of the United States, together with State, County and Town Government, through the fall term; Political Economy and Sociology through the winter and spring terms; Physiological Psychology through the spring term.

The department of biology has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration, there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Leuckart's zoölogical wallcharts, and other charts and diagrams of our own make, (5) ample blackboard facilities of which much is made, (6) chemical and physical apparatus, (7) all necessary mechanical appliances. The collection of skeletons of all the domestic animals cannot be excelled. In the class of birds, there have just been added all the species of Rhode Island, comprising some three hundred individuals. These prove of exceptional interest and stimulate inquiry because of their local habitat and more or less familiar mien. In the collection are found the skeletons of all the great classes of birds showing striking structural peculiarities. It is also proposed to add the nests and eggs of all those species of the collection which nest in the State. It will thus be seen that there is an exceptionally good equipment for teaching the courses in zoölogy, physiology, and anatomy, both human and comparative, which are so liberally provided for in this College.

Apparatus is being collected for the course in experimental psychology. The course occupies but one term and the time given to experimentation is limited. The demonstrations are simple mechanical appliances to illustrate the sensations and perceptions. But few experiments are attempted on the more complex mental phenomena, which require intricate and costly appliances, much time and more special training than the College students can summon. The beautiful models and charts of the human brain, spinal cord, and organs of special sense, are most serviceable in teaching the mechanism and functions of the great nerve centres. The appliances in this department are so complete as to expedite the study in no small degree. It is believed that a more lively interest is thus created, that more ground is covered, and that a clearer comprehension of this branch is given than could otherwise be done in twice the time allotted to it. The same claim may be predicated of the whole range of biological studies.

Immediately after last year's report, the College was visited by a mild epidemic of German measles of twenty cases. They were mostly of so mild a type as to interfere but slightly with the regular college work. Since then there has been the usual good health among the students and teachers. During the last term, ten cases of injury incident to football playing have been treated, among them two fractures and two dislocations.

It is difficult to see how this violent game, as usually conducted in outside contests, serves, in any proper sense, the uses of a wholesome physical training. If it does not, then it is hostile to all educational aims. Certainly all other influences combined do not distract the attention from regular college work so much as this one sport. Its present practices are in direct conflict with the philosophy of exercise. Neither in the arts of war nor of peace is the modern man called upon for phenomenal muscle or wind, and these are both important prerequisites of the unusual exertions of football. Over-training is at the expense, in some degree, of the mental and moral economy. The student needs a capacity for resolves and activities incited by something of higher order than retaliation and gate-money. The office of exercise is to equalize nervous energy. Muscular activity thus prevents overwork of any one nerve centre. An abounding physical life does not legitimately throw the whole reactional force on the muscles. It must leave a record on the brain and other nerve centres as a whole. The more or less sedentary lives which students are pretty sure to follow later on will not require the physical standards of professional athletes; on the contrary, such standards are found to be impediments to an easy and sustained mental activity.

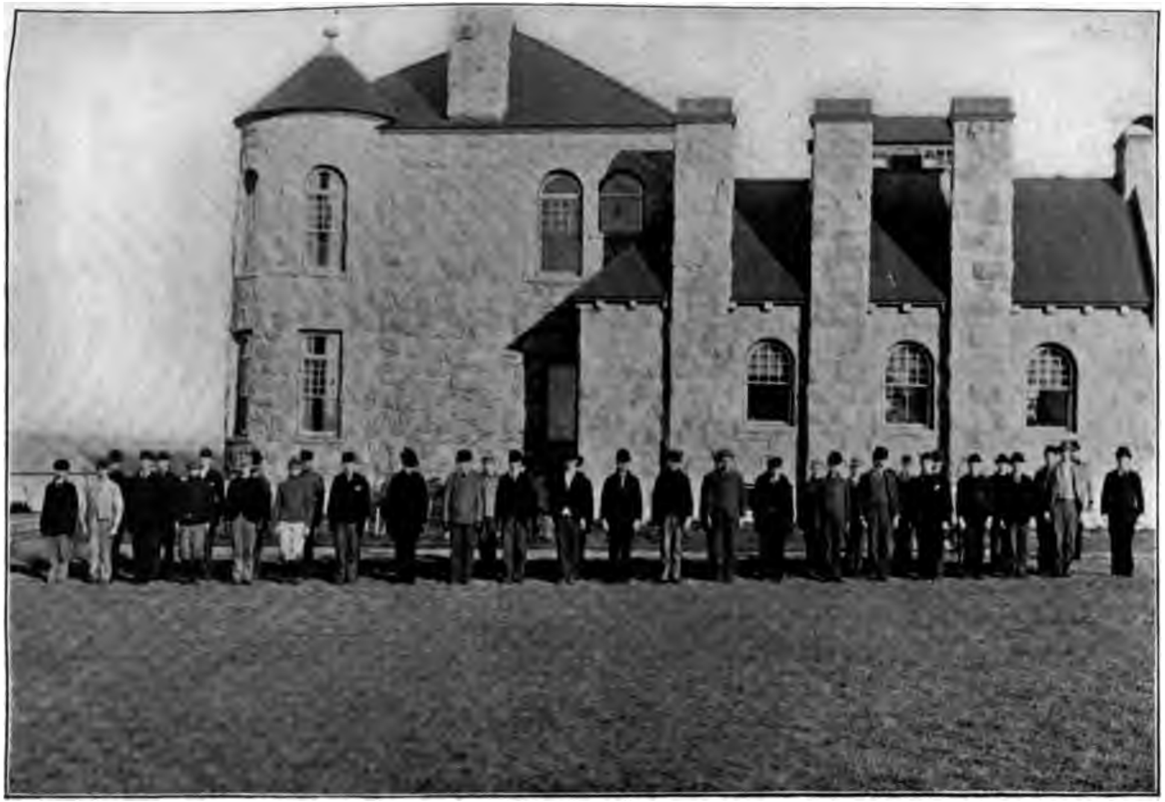
The temporary building erected a few weeks ago for the purposes of military drill and light gymnastics has proved of much service. It is most instructive to witness the improvement in the whole morale of the students under a few weeks of military drill in neat and dressy suits. It is encouraging to see active preparations going on for the building of an ample gymnasium. Each winter as the classes become larger, the need of facilities for rational exercise is felt more and more.

BOTANY.

The department of botany enters upon its work as a distinct department with the beginning of 1895. A commodious laboratory has been provided and fitted with new apparatus and books. The required work for the students in mechanics covers two terms; and for the student in agriculture, three terms. The first two terms will be devoted to the study of a few groups of plants from the lowest to the highest. Flowering plants of economic importance will be studied in the third term. The work may be elected as indicated in the courses of study.

MILITARY SCIENCE AND TACTICS.

The military department was duly organized immediately after the arrival on November 12th of Capt. William W. Wotherspoon of the 12th Infantry, who was assigned to duty as Professor of Military Science and Tactics by the President of the United States, by



COMPANY A.—THE FIRST DRILL.

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special orders No. 257 from the war department, dated November 1st, 1894.

The male students of the College were organized as a company of infantry, which organization it is recommended they hold until an increase in the number of under-graduates will warrant a battalion organization. Of course this does not prevent instruction in both cavalry and artillery ; indeed, it prepares the way for it.

The cadets were wholly uninstructed, and it was necessary to start from the foundation ; instruction was therefore given in the school of the soldier, without arms, during the term. Seventeen hours have been given to drill during the latter part of the term besides the necessary verbal instruction ; and six inspections in quarters have been made.

The drill and instruction have been devoted mainly to the setting-up exercises, facings, and marching in column ; and no effort has been spared to instill into the cadets a sense of the importance of the work undertaken, while producing a proper and healthful carriage of the body and that quickness and readiness to obey which is necessary in a soldier. The progress made in the very limited time has been most satisfactory, and evinces an enthusiasm and intelligence on the part of the cadets which cannot be too highly commended. They have been quick to learn, ready to obey, and at all times respectful in deportment and neat in their habits.

The inspections in quarters have resulted in marked improvement in the rooms. All orders have been obeyed ; and as the inspections become more rigid, as they will, matters in the dormitory will be much changed.

The cadets have been uniformed at very moderate expense in a neat and handsome uniform of fine blue cloth, consisting of a blouse and trousers cut after the pattern worn by the U. S. naval cadets, with forage caps holding the coat of arms of the State of Rhode Island. This uniform is not only handsome and economical but will last a long time with moderate care. It is recommended that white collars and an overcoat be added to it, and that the overcoat be worn at all times out of doors during the winter. As at present organized, the company has a full set of non-commissioned officers who are zealous and painstaking in their duties and show much promise. As soon as the number of under-graduates increases, there will be the rating of a captain and lieutenants and the appointment of additional sergeants and corporals.

A full set of arms and equipments will be received early in the next term both for drill as infantry and artillery. Requisitions have been made upon the ordnance department of the army for them, and there should not be much delay. The greatest difficulty found so far in this department has been the weather and the limited space under cover for drill. When the weather would permit, drill has been held out of doors; otherwise, in the temporary shed built for the purpose. No hours have been lost for any cause, however, and the drill hall and gymnasium now in course of construction, will, it is hoped, be finished in time for next winter. When it is finished, the College will be equipped with a drill hall superior to that of any institution of learning in the United States, and with a gymnasium equal to the very best.

DRAWING.

The College has a very fine studio, well equipped for advanced work. For Freshmen and Sophomores, the study of free-hand drawing and modeling is compulsory. They begin in the spring term with the study of values from objects and still life, continuing in the fall to draw and model from casts, with which the department is well supplied, though additions will constantly be made. In the Junior and Senior years, those who have ability and inclination may go on in any branch that they wish to elect, provided they are ready for it. It is hoped in the future that more time can be given to the elective work.

The sketch class is a very interesting feature of the department.

THE STUDIO.

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This meets for one hour, once a week, and is conducted by its members, who pose in turn or find a substitute. These time sketches from life, without instruction, are a great help to the student in observing and noting quickly the effect desired. The library of the studio has a good nucleus of art books. These are already appreciated by the pupils. The effects procured in Europe the past summer are rare and of great value to the department. The increase in material has already made our facilities for study equal to those in most city schools of much older growth.

A great difficulty arises from the very limited time given to this study; and yet the students that have worked seriously and earnestly—as have most of them—have produced very satisfactory results.

BEE CULTURE.

Instruction is given both by text-book and lectures. This instruction will be thoroughly practical. The natural history, physiology, and the peculiar habits of bees will be taught, to acquaint the student with the reasons for performing the various operations; but the class-room instruction will be but an introduction to the practical work in the Experiment Station Apiary.

This Apiary of twenty colonies is fitted with the best of hives for performing all the operations in vogue among bee-keepers with the least amount of labor; and furnishes bees, combs, queen-cells, and other illustrative material for use in the class-room. The Station collection of the different hives used by the various leading honey-producers is also a valuable aid in this line of work.

COURSES OF INSTRUCTION.

THE following courses of instruction are offered in the different departments. All studies required of regular students lead to the degree of Bachelor of Science.

MATHEMATICS.

1. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Fall, winter and spring terms; 5 hours per week. Required of all candidates for a degree.*

2. Book-keeping (Bryant and Stratton).—Explanation of commercial terms; single entry; double entry; use of books,—day-book cash-book, journal and ledger; practical exercises; original accounts; farm accounts; mechanics' accounts; inventory; statements; partnership; interest; discount; exercise in commercial forms—bills, receipts, checks, notes, orders, drafts. *Winter term; 4 hours per week. Required of all candidates for a degree.*

3. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Spring and fall terms; 4 hours per week. Required of all candidates for a degree.*

4. **Plane Trigonometry (Wentworth).**—The derivation of the fundamental formulas; logarithms; the solution of right and oblique triangles; practical problems. *Winter term; 3 hours per week. Required of all candidates for a degree.*

5. **Plane Surveying (Carhart).**—Elementary course, field work, recitation and plotting. Use of compass, transit, plane table, and levels; adjustment of instruments; stadia surveying. *Spring term; 2 hours of classroom, 5 hours of field work per week. Additional practice on Saturdays. Required of all candidates for a degree.*

6. **Road Construction and Leveling (Gillespie).**—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term; 3 hours of text-book work, 3 hours of field work per week. Required of students in the Agricultural course.*

7. **Solid Geometry (Wells).**—Lines and planes in space; diedral angles; polyhedral angles; polyhedrons, the cylinder, cone and sphere; measurement of the cylinder, cone and sphere; numerical examples and original demonstrations. *Fall term; 3 hours per week. Required of students in the Mechanical course.*

8. **Analytical Geometry (Hardy).**—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic section; higher plane curves. *Fall and winter terms; 4 hours per week. Required of students in the Mechanical course.*

9. **Descriptive Geometry (Faunce).**—Notation and elementary principles; problems on the point, line and plane; problems relating to the cylinder, cone and double curved surfaces of revolution; intersection and development of planes and solids; practical problems. *Fall term; 3 hours per week. Required of students in the Mechanical course.*

10. **Calculus (Taylor).**—The differentiation of algebraic, trigonometric, logarithmic, exponential and anti-trigonometric func-

tions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variables; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Spring, fall and winter terms; 3 hours per week. Required of students in the Mechanical course.*

11. General Astronomy (Young).—The text study is accompanied by frequent lectures, illustrated with copious lantern slides of celestial phenomena; observations of the heavens with a four inch telescope, and laboratory work with the sun spectrum, and the spark spectrum sufficient to give an insight into the methods of the new astronomy. *Spring term; 4 hours per week. Required of all candidates for a degree.*

12. Synthetic Geometry (Dupuis).—The line, point, and circle; comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Elective open to students who have completed courses 1 and 3.*

13. Determinants (Harris).—Proofs of fundamental propositions; determinant minors; development of determinants; rectangular arrays; reciprocal determinants; symmetrical, skew-symmetric, and skew-determinants. *Elective open to all students who have completed course 10.*

14. Advanced Calculus (Byerly).—An extension of course 10 including further discussion of definite integrals; imaginaries length of curves, areas, volumes, the elements of elliptic integrals and of the theory of the functions. *Elective open to students who have completed course 10.*

15. Analytical Mechanics (Same as Mechanics 7).—*Junior year spring term. Open to students who have completed one term o course 10.*

PHYSICS.

1. General Course.—Study of mechanics, pneumatics, hydraulics and acoustics. Recitations. Fall term. Electricity and magnetism. Winter term. Light and Heat. Spring term. *Throughout the Sophomore year, 3 hours per week. Required of all candidates for a degree.*

2. Physical Laboratory.—In connection with course 1. *Throughout the Sophomore year, 2 hours per week.*

3. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Spring term, Senior year; 3 hours per week. Elective.*

4. Laboratory work in connection with course 3. *2 hours per week.*

MECHANICS.

1. Strength of Materials.—Strength of iron and steel; simple and continuous beams; pipes and columns. *Spring term, Junior year; 2 hours recitations and 3 hours laboratory work per week. Required of all Mechanical students.*

2. Mechanism.—Rectilinear motion. Rotary motion. Transmission of motion. *Spring term, Junior year; 3 hours per week. Required of all Mechanical students.*

3. Steam Engineering.—Study of steam and its properties; simple and compound engines; steam boilers. *Fall term, Senior year; 3 hours per week. Elective.*

4. Mechanics of Engineering.—Bodies in equilibrium and in motion; work and power; friction of rest and motion. Recitations. *Fall term, 5 hours per week.* Theory of arches, retaining walls, gas engines, hot-air engines. *Winter term, 4 hours per week.* Hydraulics and water-wheels. *Spring term. All during the Senior year. Required of all Mechanical students.*

5. Metallurgy.—Study of the manufacture of cast iron, wrought

iron, and steel; rolling-mill machinery; metallurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year; 3 hours per week. Elective.*

6. Shop-Work.—*A*. Use of wood-working tools, bench-work, carpentering. *Fall term, Freshman year; 6 hours per week.* Carpentering and practical constructions in wood. *Winter term, Freshman year; 6 hours per week.*

B. Wood-Turning. *Fall term, Sophomore year; 6 hours per week.* Forging, drawing iron, bending, welding, and tool-dressing. *Winter term, Sophomore year; 6 hours per week.* Estimates of construction. *Winter term, 2 hours; for Agricultural students.* Forging. *3 hours, Spring term, Sophomore year; for Mechanical students.*

C. Pattern-Making, Moulding and Casting. *Fall term, Junior year; 3 hours per week.* Machine-shop practice. *Winter term, Junior year; 3 hours per week.* Machine-shop practice. *Spring term, Junior year; 3 hours per week. C. required of Mechanical students.*

D. Machine Constructions. *Throughout the Senior year, 6 hours per week. Required of Mechanical students.*

7. Analytical Mechanics (Same as Mathematics 15). *Junior year, Spring term. Open to students who have completed one term of Mathematics 10.*

ENGLISH.

1. Review of elementary principles. Study of representative American authors. Composition. *5 hours, Fall and Winter terms, Freshman year; and 4 hours Spring term. Required of all candidates for a degree.*

2. Rhetoric. Continued study of American literature. Composition. *Fall and Winter terms, Sophomore year; 2 hours per week. Required of all candidates for a degree.*

3. **General English Literature and History.** *Winter and spring terms. Junior year; 4 hours per week. Required of all candidates for a degree.*

4. **English Literature.** Study of special periods and authors. *Throughout Senior year; 3 hours per week. Open to those who have taken courses 1, 2 and 3.*

5. **Orations and Essays.** *Throughout Senior year; 1 hour per week. Required of all candidates for a degree.*

GERMAN.

1. **Elementary Course.** Grammar, dictation, conversation. Bernhardt's Deutsches Sprach und Lesebuch. *Throughout Junior year; 3 hours per week. Required of all candidates for a degree.*

2. **Middle Course.** Composition. Modern German writers. *Fall term of Senior year; 3 hours per week. Elective.*

3. **Advanced Course.** German Classics. History of German literature. *Winter and Spring terms, Senior year; 3 hours per week, for those that have taken courses 1 and 2.*

4. **Scientific German.** *Winter and Spring terms, Senior year; 2 hours per week. Elective for those that have taken courses 1 and 2.*

5. **Reading at sight of easy German.** *Throughout Senior year; 1 hour per week. Elective for those that have taken courses 1 and 2.*

FRENCH.

1. **Elementary Course.** Grammar, dictation, conversation. Sauveur's Petites Causeries. *Throughout the Sophomore year; 3 hours per week. Required of all candidates for a degree.*

2. **Middle Course.** Composition. Modern French writers. *Throughout the Junior year; 3 hours per week. Elective for those that have taken course 1.*

3. Advanced Course. French classics—Molière and Racine. History of French literature. *Throughout the Senior year; 3 hours per week. Elective for those that have taken courses 1 and 2.*

4. Scientific French. *Throughout the Senior year; 2 hours per week. Elective for those that have taken courses 1 and 2.*

5. Reading at sight of easy French. *Throughout the Senior year; 1 hour per week. Elective for those that have taken courses 1 and 2.*

LATIN.

1. Elementary Course. Beginner's Latin Book. Grammar. *Throughout Freshman year; 3 hours per week. Elective.*

2. Cæsar. Composition. *Throughout Sophomore year; 3 hours per week. Elective.*

3. Cicero. Composition. *Throughout Junior year; 3 hours per week. Elective.*

4. Virgil. Composition. *Throughout Senior year; 3 hours per week. Elective.*

HISTORY.

1. American History. *Fall term, Freshman year; 2 hours per week. Required of all candidates for a degree.*

2. General History. *Winter and Spring terms, Freshman year; 2 hours per week. Required of all candidates for a degree.*

3. English History. Studied in connection with general English literature. *Winter and Spring terms, Junior year; 4 hours per week. Required of all candidates for a degree.*

4. Special historical work for individual students. *Spring term, Senior year; 3 hours per week. Elective for those having taken courses 1, 2 and 3.*

PHYSIOLOGY, ZOÖLOGY AND COMPARATIVE ANATOMY.

1. Elementary Course in Human Physiology. Lectures and recitations. Includes hygiene instruction, development of observing faculties. *Winter and Spring terms, Freshman year; 3 hours per week. Required of all candidates for a degree. Elective for Special students.*

2. Advanced Course. Presupposes knowledge of chemistry, embryology and zoölogy. Based on the laws of the conservation of energy. Instruction demonstrative, comparative, and theoretical. *Fall term, Senior year; 5 hours per week. Required of Agricultural students.*

3. Vertebrate Physiology and Anatomy. Incidentally in connection with advanced course of human anatomy and physiology, with course of veterinary. *Spring term, Senior year; 4 hours per week.• Instruction wholly demonstrative. Required of Agricultural students.*

4. Invertebrate Physiology and Anatomy. In course of zoölogy. *Fall term, Junior year; 4 hours per week. Required of Agricultural students.*

5. Zoölogy. General Course. *Fall term, Junior year, 4 hours per week. Required of Agricultural students.*

6. Veterinary Science. Theory of practice. Based on course of comparative anatomy and physiology. *Winter term, Senior year; 3 hours per week. Required of Agricultural students.*

7. Embryology. Limited Course. Introductory to course 5. Lectures, laboratory work with incubators, microscopical dissections, and alcoholic preparations, and models. *Required of Agricultural students.*

POLITICAL SCIENCE.

1. Town, County, State, and United States.—Their origin, development, and practices. Critical analysis of the Constitution of

the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 hours per week. Required of all candidates for a degree.*

2. Political Economy.—Elementary course. Based on Walker's Briefer Course, and Andrews's Institutes of Economics. Lectures, recitations, discussions, readings, original problems, citations from the daily press, and essays. *Winter term, Senior year; 4 hours per week. Required of all candidates for a degree.*

PSYCHOLOGY.

Elementary Course.—Lectures, recitations, simple laboratory experiments. *Spring term, Senior year; 4 hours per week. Required of all candidates for a degree.*

CHEMISTRY.

1. General Chemistry, Briefer Course, Non-metals.—Recitations and lectures. *Spring term, Sophomore year; 4 hours per week. Required of all candidates for a degree.*

2. Laboratory Work.—Experimental chemistry. *2 hours per week, given in connection with course 1.*

3. General Chemistry.—Metals. Lectures and recitations. *Fall term, Junior year; 3 hours per week. Required of all candidates for a degree.*

4. Qualitative Analysis.—*Fall term, 4 hours per week; Winter term, 6 hours per week; Junior year. Required of all candidates for a degree.*

5. Organic Chemistry.—Lectures and recitations. *Winter term, Junior year; 4 hours per week. Required of Agricultural students.*

6. Agricultural Chemistry.—Lectures. *Spring term, Junior year; 3 hours per week. Required of Agricultural students.*

7. **Quantitative Analysis.**—*6 hours per week. Required of those taking course 6.*

8. **Theoretical Chemistry and Quantitative Analysis.**—*Throughout Senior year; 6 hours per week. Elective.*

BOTANY.

1. **Biology of Plants.**—Comparative morphology and physiology are emphasized rather than the details of classification. Laboratory, reading, and lectures. *Winter and Spring terms, Sophomore year; 8 hours per week. Required of all candidates for a degree.*

2. **Systematic and Economic.**—Orders of phanerogams of economic importance are studied from fresh and preserved material. *Fall term, Junior year; 4 hours per week. Required of Agricultural students. Elective for those who have taken course 1.*

3. **Fungi.**—A study of types of fungi with special reference to parasitic forms of economic importance. Laboratory, reading, and lectures. *Elective for those having taken course 1, as an 8 hour course for the Fall term, or a 4 hour course for the year.*

4. **Histology.**—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *This course may be elected as an 8 hour course for the Fall term, or a 4 hour course for the year.*

GEOLOGY.

General Course.—Structural and dynamical. *Winter term, Senior year; 2 hours per week.* Lectures and recitations. Historical, with excursions. *Spring term, Senior year; 4 hours per week.* Lectures and recitations.

MILITARY SCIENCE AND TACTICS.

1. **Infantry Drill.**—School of the soldier. School of the company. School of the battalion and small-arm target practice. *Throughout the course, 3 hours per week.*

2. Artillery Drill.—School of the soldier dismounted. Sabre exercise and target practice. School of the battery dismounted for selected detachments. Students in course 2 are selected by the commandant from those reasonably proficient in course 1.

3. Military Science.—*Lectures given in Winter term.*

4. Signal Drill.—With heliograph flags, torches, and telegraphic instruments, according to the United States signal code.

HORTICULTURE.

1. Pomology.—Lectures and laboratory work. *Spring and Fall terms; 2 hours per week. Elective.*

2. Market Gardening.—Lectures, and work in the garden. *Spring and Fall terms; 2 hours per week. Elective.*

3. Floriculture.—*Winter term.* Practical exercises in greenhouse. *3 hours per week. Elective.*

4. Landscape Gardening.—Lectures and conferences, with numerous illustrations. *Spring term, Senior year; 2 hours per week. Required of Agricultural students.*

AGRICULTURE.

1. Farm Management.—Definition of agricultural terms; mixed husbandry; special farming; rotation of crops; general suggestions for agricultural practice; farm buildings—plans, size, location, arrangement, care; silos and ensilage; farm fences; fence laws; methods of constructing fences; economy in the selection of fences; portable fences; gates. Farm tools and implements; reapers, mowers, hay-tedders and rakes, plows, harrows, grain-drills, cultivators, rollers, etc. Value, selection, use, and care of farm tools. Lectures. *Fall term, Freshman year; 2 hours per week. Required of all candidates for a degree.*

2. Farm Bookkeeping (Same as Mathematics 2).—Inventory; use of day-book, cash-book, and ledger on the farm; farm accounts; accounts with stock, fields, and crops; yearly statements; interest

and discount. Classroom practice. *Winter term, Freshman year; 4 hours per week. Required of all candidates for a degree.*

3. Drainage.—Drainage for Profit and Health (Waring). Sources of water; necessity of drains; kinds of drains; how drains act; how to lay out, build, and care for drains; drain tiles, cost and value of drains; sanitary effects of drainage; practice in the use of tools and instruments; details of the work. Text-book and actual practice. *Spring term, Freshman year; 4 hours per week. Required of all candidates for a degree.*

4. Farm Crops and their Production.—Selection and preparation of soil and seed; quantity of seed; time of seeding; cultivation and harvesting of various farm crops; hay crop, its importance in agriculture; varieties of grasses; influence of time of cutting upon the value; method of storing; leguminous fodder crops; corn as a grain crop; five types of corn; corn and other crops for the silo. Other cereals—wheat, oats, barley and rye—origin, history and value; root crops—potatoes, beets, turnips, carrots, and onions; miscellaneous crops—buckwheat, cabbages, pumpkins, squashes, field peas, tobacco, broom corn; weeds—injury, dissemination, and eradication. Lectures. *Fall term, Sophomore year; 2 hours per week. Required of Agricultural students.*

5. Breeds of Live Stock—Horses, cattle, sheep, and swine (Curtis).—Horses: draft; coach; saddle; thoroughbred; trotters; ponies; care and selection. Cattle: dairy; general purpose; beef; care, selection, and management. Sheep: short wool; middle wool; long wool; care, selection and management. Swine: large breeds; medium breeds; small breeds; care, selection, and management. Origin of breeds; adaptability to climates and conditions; tracing pedigrees; scoring animals. Text-book and lectures. *Fall term, Sophomore year; 3 hours per week. Required of Agricultural students.*

6. Agriculture (Storer).—Relations of heat, air, and water to the soil; relations of soil, atmosphere, heat, light, and water upon

the growth of plants; tillage and implements; natural sources of plant food; action of manures, special manures, phosphatic manures, nitrogenous compounds; green manuring; seaweeds, humus, farmyard manure; composts; modes of applying manures, night soil, history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. *Winter term, Junior year; 3 hours per week. Spring term, Junior year; 4 hours per week. Required of Agricultural students.*

7. Stock-Breeding (Miles).—Breeding as an art; heredity, normal characteristics; diseases, acquired and abnormal characteristics; atavism (reversion); law of correlation; variation; fecundity; in and in breeding; cross breeding; relative influence of parents; sex; pedigree; animal form and index of qualities; selection; period of gestation. Text-book. *Fall term, Senior year; 3 hours per week. Required of Agricultural students.*

8. Feeding Animals (Stewart).—Composition of animal bodies; relative proportion of different parts of the carcass; elements of food material; digestion, its effect upon food; respiration and excretions; value of various animal manures; stock barns and their relation to the economy of feeding; principles of alimentation; early maturity; how to feed young animals; stock foods; nutritive ratio and feeding standards; definition of terms; calculation of ratios for various conditions and ages of animals; calculation of cost of rations, and their manurial value; soiling,—economy in land, fences, feed, and manure,—disadvantages, labor required; soiling crops; ensilage; economy of preserving crops in the silo; variety of crops that may be ensilaged; value of legumes and balancing rations; feeding for beef or milk; feeding horses, sheep, and swine; cooked and uncooked food; cold and warm water; temperature of stables, and ventilation. Text-book. *Winter term, Senior year; 1 hour per week. Required of Agricultural students.*

9. **Fertilizers.**—Study of the composition of the various agricultural chemicals as sold in the markets; calculation of formulas for special crops; calculation and value of various homemade fertilizers. Lecture and classroom calculations. *Spring term, Senior year; 1 hour per week. Required of Agricultural students.*

10. **Dairying.** American Dairying (Jurler).—The dairy cow, type, breeding, and management from birth to maturity; feed and management; branches of dairy husbandry; dairy utensils, milking; care of milk; separators and butter accumulators; separating cream; ripening and churning; salting, working, packing and printing butter. The Babcock milk test; test of skim milk and cream; value of skim milk; building creameries. Text-book and lectures. *Winter term, Senior year; 2 hours per week. Elective.*

Courses are also offered in bee-keeping, and in commercial and agricultural law.

COURSE OF STUDY

OF THE

Rhode Island College of Agriculture and Mechanic Arts.

FRESHMAN YEAR.

FALL TERM.

Algebra	5 hours.[1]	Bench-work in Wood	6 hours.
English	5 "	Military Drill	3 "
Physical Geography	3 "	Inspection	1 "
History	2 "	Latin (elective)	3 "
Agriculture	2 "		

WINTER TERM.

Algebra	5 hours.	Wood Work	6 hours.
English	5 "	Military Drill	3 "
Physiology	3 "	Inspection	1 "
History	2 "	Latin (elective)	3 "
Bookkeeping and Business Law	5 "		

SPRING TERM.

Algebra and Logarithms	3 hours.	Free-Hand Drawing	4 hours.
English	4 "	Agriculture	4 "
Geometry	4 "	Military Drill	3 "
Physiology	2 "	Inspection	1 "
History	2 "	Latin (elective)	3 "

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[1] The figures represent the number of hours of classroom work **per week in each study.**

SOPHOMORE YEAR.

FALL TERM.

Agricultural Course.			Mechanical Course.		
Plane Geometry	5	hours.	Plane Geometry	5	hours.
Agriculture	3	"	Physics	3	"
Physics	3	"	English	2	"
English	3	"	French	3	"
French	3	"	Free-Hand Drawing	2	"
Free Hand Drawing	2	"	Physical Laboratory	2	"
Modeling	2	"	Wood Turning	6	"
Physical Laboratory	2	"	Military Drill	3	"
Practical Agriculture	2	"	Inspection	1	"
Wood Turning	3	"	Latin (elective)	3	"
Military Drill	3	"			
Inspection	1	"			
Latin (elective)	3	"			

WINTER TERM.

Agricultural Course.			Mechanical Course.		
Trigonometry	3	hours.	Trigonometry	3	hours.
Mechanical Laboratory	8	"	Mechanical Laboratory	8	"
English	2	"	English	2	"
Physics	3	"	Physics	3	"
French	3	"	French	3	"
Mechanical Drawing	2	"	Mechanical Drawing	2	"
Constructions	2	"	Forging	6	"
Estimates	2	"	Physical Laboratory	2	"
Physical Laboratory	2	"	Military Drill	3	"
Military Drill	3	"	Inspection	1	"
Inspection	1	"	Latin (elective)	3	"
Latin (elective)	3	"			

SPRING TERM.

Agricultural Course.			Mechanical Course.		
Surveying	1	hour.	Surveying	1	hour.
Physics	3	hours.	Physics	3	hours.
Botanical Laboratory	8	"	Botanical Laboratory	8	"
French	3	"	French	3	"
Inorganic Chemistry	3	"	Inorganic Chemistry	3	"
Experimental Chemistry	2	"	Experimental Chemistry	2	"
Physical Laboratory	2	"	Physical Laboratory	2	"
Practical Surveying	6	"	Mechanical Drawing	3	"
Military Drill	3	"	Forging	3	"
Inspection	1	"	Military Drill	3	"
Art Work (elective)	2	"	Inspection	1	"
Pomology (elective)	2	"	Art Work (elective)	2	"
Latin (elective)	3	"	Latin (elective)	3	"
			Synthetic Geometry (elective)	3	"

JUNIOR YEAR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Road Construction and Leveling	3 hours.	Inorganic Chemistry	3 ho
Botany	4 "	Analytical Geometry	4 '
Inorganic Chemistry	3 "	Solid Geometry	3 '
German	3 "	German	3 '
Pomology	2 "	Descriptive Geometry	3 '
Qualitative Analysis	4 "	Qualitative Analysis	4 '
Practice in Leveling and Road Surveying	3 "	Pattern Making	5 '
Military Drill	3 "	Military Drill	3 '
Inspection	1 "	Inspection	1 '
Market Gardening	2 "	Latin (elective)	3 '
Latin (elective)	3 "	French (elective)	3 '
French (elective)	3 "	Art Work (elective)	2 '
Art Work (elective)	2 "		

WINTER TERM.

English	4 hours.	English	4 ho
Agriculture	5 "	Analytical Geometry	4 '
Organic Chemistry	4 "	German	3 '
German	3 "	Calculus	3 '
Qualitative Analysis	6 "	Qualitative Analysis	6 '
Forging	3 "	Mechanical Drawing	3 '
Military Drill	3 "	Machine Shop Practice	3 '
Inspection	1 "	Military Drill	3 '
Latin (elective)	3 "	Inspection	1 '
French (elective)	3 "	Latin (elective)	3 '
Floriculture (elective)	2 "	French (elective)	3 '
Botany (elective)	2 "		

SPRING TERM.

English	4 hours.	English	4 ho
Agriculture	2 "	Calculus	3 '
Agricultural Chemistry	3 "	German	3 '
German	3 "	Principles of Mechanism	2 '
Zoölogy	4 "	Strength of Materials	3 '
Chemical Laboratory	6 "	Machine-Shop Practice	3
Military Drill	3 "	Mechanical Drawing	2
Inspection	1 "	Military Drill	3
Latin (elective)	3 "	Inspection	1
French (elective)	3 "	Chemical Laboratory (elective)	6

JUNIOR YEAR.—SPRING TERM—*Continued.*

Agricultural Course.		Mechanical Course.	
Art Work (elective)	6 hours.	Latin (elective)	3 hours.
Agricultural Mechanics (elective	6 "	French (elective)	3 "
Botanical Laboratory (elective)	6 "	Analytical Mechanics (elective)	3 "
Market Gardening (elective)	2 "	Art Work (elective)	6 "
Pomology (elective)	2 "		

SENIOR YEAR.

FALL TERM.

Comparative Anatomy and Physiology	5 hours.	Calculus	3 hours.
Political Economy and Science of Government	4 "	Political Economy and Science of Government	4 "
Agriculture	8 "	Applied Mechanics	5 "
Orations	1 "	Orations	1 "
Military Drill	3 "	Machine-Shop Practice	6 "
Inspection	1 "	Military Drill	3 "
English Literature (elective)	3 "	Inspection	1 "
Apiary Work (elective)	1 "	English Literature (elective)	3 "
Botany (elective)	2 "	French (elective)	3 "
Art Work (elective)	3 "	German (elective)	3 "
Pomology (elective)	3 "	Latin (elective)	3 "
Market Gardening (elective)	3 "	Engineering (elective)	3 "
Chemistry (elective)	3 or 6 "	Art Work (elective)	3 "
French (elective)	3 "	Chemistry (elective)	3 or 6 "
German (elective)	3 "	Electricity (elective)	3 "
Latin (elective)	3 "	Determinants (elective)	3 "

WINTER TERM.

Veterinary Science	3 hours.	Political Economy	4 hours.
Agriculture	1 "	Applied Mechanics	4 "
Political Economy	4 "	Orations	1 "
Market Gardening	3 "	Mechanical Practice	6 "
Geology	2 "	Military Drill	3 "
Orations	1 "	Inspection	1 "
Military Drill	3 "	English Literature (elective)	3 "
Inspection	1 "	Latin (elective)	3 "
English Literature (elective)	3 "	French (elective)	3 "
Latin (elective)	3 "	German (elective)	3 "
French (elective)	3 "	Engineering (elective)	3 "
German (elective)	3 "	Chemistry (elective)	3 or 6 "
Botany (elective)	2 or 4 "	Advanced Calculus (elective)	3 "
Floriculture (elective)	3 "		
Dairying (elective)	3 "		
Chemistry (elective)	3 or 6 "		

SENIOR YEAR—SPRING TERM.

Agricultural Course.

Forestry and Landscape Gardening	2 hours.
Geology	2 "
Mental Science	4 "
Veterinary Science	4 "
Geology Excursions	2 "
Military Drill	3 "
Inspection	1 "
Astronomy	4 "
English Literature (elective)	3 "
Latin (elective)	3 "
French (elective)	3 "
German (elective)	3 "
Pomology (elective)	3 "
Botany (elective)	2 or 4 "
Chemistry (elective)	3 or 6 "
Stock Feeding (elective)	3 "
Art Work (elective)	3 "
History (elective)	3 "
Apiary Work (elective)	1 "

Mechanical Course.

Engineering Conference	2 ho
Applied Mechanics	5 '
Astronomy	4 '
Military Drill	3 '
Inspection	1
Mechanical Practice	6
English Literature (elective)	3
Latin (elective)	3
French (elective)	3
German (elective)	3
Mental Science (elective)	4
Chemistry (elective)	3 or 6
Engineering (elective)	3
Machine Design (elective)	3
History (elective)	3
Advanced Calculus (elective)	3

AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the State who cannot attend the College as students, the faculty has arranged a course of study known as the Agricultural College Extension. The plan of operation is similar to that of the Chautauqua Reading-Circle. On December 20th, 1894, circulars giving the course of study, supplementary reading, and other information relating to the course, were sent to those persons within the State whose names were on our mailing list. The following is reprinted from our Extension circular:

COURSE OF STUDY.

The course of study is so arranged as to meet the requirements of all, with no limitations as to age, sex, or occupation. Persons may take short special courses in any branch, and receive certificates for proficiency therein, or they may take a more extended course, and receive the award of a special diploma. An examination either at the college or under the direction of some authorized person will be necessary for obtaining either certificate or diploma, but this arrangement does not prevent persons from taking any course without such examination. Persons desiring to graduate will be required to pass an examination on at least one book under each number in the following three years' course; thus taking five studies each year. Additional work may be taken by any desiring it. Persons will be passed, upon writing a satisfactory review, of one thousand or more words, of the books marked by a star. On all other books, a written examination will be re-

		Publisher's Price.	Price to Members of the Extension.	Postage.
	FIRST YEAR.			
1.	First Principles of Agriculture. *Mills and Shaw*	$	$ 40	$ 05
	American Literature. *Hawthorne and Lemmon*		1 12	10
2.	*Home Floriculture. *Rexford*	1 50	1 20	08
	Silos, Ensilage, and Silage. *Miles*	50	38	04
	*Helps for Home Makers. *Mary Blake*	75	56	08
3.	Insects and Insecticides. *Weed*	1 25	1 00	08
	The Human Body. *Martin*		1 20	10
4.	Feeding Animals. *Stewart*	2 00	1 60	12
	American History. *Montgomery*		1 00	11
5.	Manual of the Constitution. *Andrews*		1 00	08
	SECOND YEAR.			
1.	Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$ 06
	Representative English Literature. *Pancoast*		1 60	12
2.	Text-Book of Botany			
	Horses, Cattle, Sheep and Swine. *Curtis*	2 00	1 60	12
	*Ornamental Gardening for Americans. *Long*	2 00	1 50	08
3.	How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
	How to Make the Garden Pay. *Greiner*	2 00	1 60	12
	Profitable Poultry Keeping. *Beale*	1 50	1 12	08
	*Anna Maria's Housekeeping. *Power*	75	56	08
4.	Stock Breeding. *Miles*	1 50	1 12	12
	English History. *Montgomery*		1 12	11
5.	Political Economy (Briefer Course). *Walker*		1 00	08
	Astronomy. *Newcomb*		1 30	12
	THIRD YEAR.			
1.	Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$ 06
	General History. *Meyers*		1 50	15
2.	A Text-Book of Chemistry			
	The Nursery Book. *Bailey*	1 00	80	06
	Draining for Profit and Health. *Waring*	1 50	1 12	08
3.	Langstroth on the Hive and Honey Bee. (Danant's Revision)		1 12	08
	American Fruit Culturist. *Thomas*			
	American Dairying. *Gurler*	1 00	80	06

		Publisher's Price.	Price to Members of the Extension.	Postage.
4.	Green-House Construction. *Taft*	$1 50	$1 20	$ 08
	Horse Breeding. *Sanders*	2 00	1 50	12
	*Our Farming. *Terry*	2 00	1 60	13
	English translation of a foreign literature.			
	(Books will be recommended later according to the subject chosen.)			
5.	*The New Womanhood. *Fernald*	1 25	94	08
	Advanced Course in Political Economy. *Walker*		2 00	15
	Soils and Rocks. *Stockbridge*	2 50	2 25	12

This arrangement affords opportunity for taking special courses in either agriculture or horticulture; while it also contains studies that will admit of a course entirely without the agricultural books, which some might not care to study exclusively.

It was with a great deal of reluctance that physiology, botany, and chemistry were placed in the course; and while a knowledge of these sciences is considered of great value, no person will be encouraged to begin them unless he arranges either to come to the College one term for laboratory practice and aid, or to join a class to be taught by an instructor from the College. This latter arrangement can be perfected, if communities, granges, etc., take up the work with that end in view.

SUPPLEMENTARY READING.

In selecting the books for this course of study, the committee has had under consideration a large number of valuable ones; and in many cases, selection was difficult. It therefore feels that in presenting the limited number of studies for this course, several books have been left out which should have a place, if not in the regular reading-course, in the home, grange, or town library. And so a list of supplementary works is appended.

	Publisher's Price.	Price to Members.	Postage.
Agriculture (2 vols.). *Storer*	$5 00	$3 75	$ 24
Talks on Manures. *Harris*	1 75	1 31	08
Practical Dairy Husbandry. *Willard*	3 00	2 00	16
The Grasses of North America. *Beal*	2 50	2 00	10

	Publisher's Price.	Price to Members.	Postage.
The Farmer's Veterinary Adviser. *Law*	$3 00	$2 40	$ .16
Plant Life on the Farm. *Masters*	1 00	75	.06
The Shepherd's Manual. *Stewart*	1 50	1 12	.11
Harris on the Pig. *Harris*	1 50	1 12	.08
Practical Poultry Keeper. *Wright*	2 00	1 50	.12
The Book of Poultry. *Wright.*	5 00	3 75	.24
Colored Plates.	12 50	9 38	.32
How Crops Feed. *Johnson*	1 50	1 12	.11
How Crops Grow. *Johnson*	1 50	1 12	.11
A B C of Bee Culture. *Root*	1 25	1 00	.12
A Modern Bee Farm. *Simmins*			
Bees and Bee-Keeping. (2 vols.) *Cheshire*			
The Production of Comb Honey. *Hutchinson*		25	
The Production of Extracted Honey. *Cowan*			
The Incubator and its use. *Rankin*			
Poultry for Profit. *Jacobs*			
Incubators and Brooders. *Jacobs*			
Natural and Artificial Duck Raising. *Rankin*			
Poultry. (A Treatise on Raising Broilers and Ducks by Artificial Means.) *McFetridge*			
Hand-book of Plants. *Henderson*	$4 00	3 20	.28
Flowers, Fruits and Leaves. *Sir John Lubbock*			
How to Know the Wild Flowers. *Dana*		1 50	Free
Origin of Species. *Darwin.*	2 00	1 50	.14
Animals and Plants under Domestication. (2 vols.) *Darwin*	5 00	8 75	.28
The American Commonwealth. *Bryce*		3 50	Free
Letters to a Daughter. *Starrett*	75	60	.06
How the Other Half Lives. *Riis*		1 25	.06
Amenities of Home	60	45	.05
How to Win. *Frances E. Willard.*	1 00	75	.07
New-England Legends and Folk Lore. *Drake*	2 00	1 50	.12
A Nameless Nobleman. *Jane Austin*	1 25	94	.08
Dr. LeBaron and his Daughter. *Jane Austin*	1 25	94	.08
Standish of Standish. *Jane Austin*	1 25	94	.08
Betty Alden. *Jane Austin*	1 25	94	.08
Half Hours with American History. (2 vols.) *Morris.*	3 00	2 25	.24
Masterpieces of American Literature		1 00	.08

	Publisher's Price.	Price to Members.	Postage.
Riverside Literature Series		15	Free
A Short History of the English People. *Green*		1 20	15
Student's History of England. *Gardiner*		3 00	15
Readings from English History. *J. R. Green*	1 50	1 12	12
English Classic Series		12	Free
Public Opinion (Periodical).			

MEMBERSHIP.

To become a member of the Extension, one will not be required to take an examination. Application may be made by sending to the secretary one's name, address, and occupation, with a statement as to the books one wishes to study the first year and the extent of one's practical experience in the line to be pursued. Upon receipt of the application, one will be enrolled as a member of the Extension; and the name will be sent to The Rhode Island News Company, 113 and 115 Westminster Street, Providence, from whom may be obtained books for the course, and all others mentioned in the list, at special rates. One may order the books one's self from this firm or procure them elsewhere; or one may send the money to the secretary, and he will order them.

CLASS STUDY.

One may begin the course at any time, and may study entirely independent of others; yet there are advantages in forming reading-circles in neighborhoods and granges, where weekly meetings for consultation and discussion may be held. If several (not less than six) in the same locality are taking the course, arrangements may be made later for an instructor to come to meetings of the readers, and give special instruction in some of the sciences.

GRADUATION.

Upon the completion of a year's work, by correspondence with the secretary, examinations may be arranged; and upon completing three years' work, and passing all the examinations, the candidate will graduate, and receive a diploma. The time of graduation will be at the close of the Spring term; and those graduating from this course will be expected to come to the College on Commencement Day.

EXPENSES.

The expense to readers in this course is for books only, any of which are worthy of a place in the farm home library, and are offered here at very reasonable prices. But in case an instructor is called to give lessons away from the College, the members interested will be required to pay his traveling expenses.

CORRESPONDENCE.

If further information is desired in connection with anything contained in this circular, or if one encounters difficulties of any nature in one's study, or wishes advice in regard to the selection of books, a letter to the secretary will insure a reply on the point in question. All interested in this work, whether members of the extension or not, should visit the College frequently—its library, laboratories, and the Experiment Station—and encourage others to do the same. It is the object and wish of the management of the College to do all it can to promote the best interests of the inhabitants of the State, and the coöperation of every loyal citizen is sought. All correspondence relating to the Agricultural College Extension should be addressed to

J. D. Towar, Secretary,
Kingston, Rhode Island.

STUDENTS.

POST GRADUATES.

Adams, George Edward	Rocky Brook,	R. I.
Ammonds, George Clarence	Kingston,	"
Clark, Helen May	Kingston,	"
Knowles, John Franklin	Kingston,	"
Madison, Warren Brown	East Greenwich	"
Rodman, George Albert	Kingston,	"

GRADUATES, 1894.

Adams, George Edward, Agr	Rocky Brook,	R. I.
Ammonds, George Clarence, Mech	Kingston,	"
Arnold, Chapin Trafford, Agr	Lonsdale,	"
Burlingame, George Washington, Agr	Glocester,	"
Clark, Helen May	Kingston,	"
Knowles, John Franklin, Mech	Kingston,	"
Madison, Warren Brown, Agr	East Greenwich,	"
Mathewson, Ernest Hoxsie, Mech	Providence,	"
Peckham, Reuben Wallace, Agr	Middletown,	"
Rathbun, William Sherman, Agr	Peace Dale,	"
Rodman, George Albert, Mech	Kingston,	"
Sargent, Charles Lawrence, Agr	Peace Dale,	"
Slocum, Samuel Watson, Agr	Peace Dale,	"
Spears, John Barden, Agr	Foster Centre,	"
Sweet, Stephen Adelbert, Agr	Slocumville,	"
Tucker, George Mason, Agr	Swansea Centre,	Mass.
Wilber, Robert Arthur, Mech	West Kingston,	R. I.

SENIORS.

Albro, Lester Franklin, Agr.	Middletown,	R. I.
Burdick, Howland, Agr.	Newport,	"
Clarke, Charles Sherman, Mech	Jamestown,	"
Hammond, John Edward, Agr.	Jamestown,	"
Oatley, Lincoln Nathan, Mech	Peace Dale,	"
Scott, Arthur Curtis, Mech	Summit,	"
Tefft, Jesse Cottrell, Mech	Jamestown,	"
Winsor, Byron Edgar, Mech	Summit,	"

JUNIORS.

Barton, Benjamin, Agr	East Greenwich,	R. I.
Brayton, Charles Andrew, Agr	Fiskeville,	"
Clark, Matthew Waite, Mech	Kingston,	"
Greenman, Adelaide Maria.	Kingston,	"
Kenyon, Albert Louis, Mech	Point Judith,	"
Moore, Nathan Lewis Cass, Agr	Shannock,	"
Tabor, Edgar Francis, Mech	Slatersville,	"
Williams, James Emerson, Mech	Summit,	"

SOPHOMORES.

Capwell, Charles Worden, Mech	South Scituate,	R. I
Carmichael, Welcome Sands, Mech	Shannock,	"
Case, Herbert Edwards Brown, Mech	Pawtucket,	"
Grinnell, Archie Franklin, Mech	Middletown.	"
Hoxsie, Bessie Bailey	Quonochontaug,	"
Kenyon, Charles Franklin, Mech	Shannock,	"
Kenyon, Albert Prentice, Mech	Ashaway,	"
Marsland, Louis Herbert, Mech	Franklin,	N. Y.
Nelson, George Oscar, Mech	Peace Dale,	R. I.
Newton, Willis Bertram, Mech	Washington,	"
Peckham, Charles Herbert, Mech	Coventry,	"
Tefft, Eliza Alice	Allenton,	"

Thomas, Irving, Mech	Lafayette,	R. I.
Tucker, Lucy Comins	Swansea Centre,	Mass.
Turner, Harriette Florence	Lakeside,	N. Y.
Wright, Mary Ella	Shannock,	R. I.

FRESHMEN.

Arnold, Sarah Estelle	Wakefield,	R. I.
Barber, George Washington	Shannock,	"
Burdick, Fred Vine	Carolina,	"
Cargill, Edna Maria	Abbott Run,	"
Case, John P.	Gould,	"
Clark, William Case, Jr.	Wakefield,	"
Clarke, William Lamont Wheeler	Jamestown,	"
Congdon, Henry Augustus	Mooresfield,	"
Flagg, Martha Rebecca	Kingston,	"
Gates, Eugene Herbert	Shannock,	"
Gardner, George Wallace	Block Island,	"
Gross, Herbert Dow	North Foster,	"
Hadfield, John Slater	Forestdale,	"
Harley, William Ferguson	Pawtucket,	"
Larkin, Jessie Louise	Watch Hill,	"
Merrill, William Chauncey Palmer	Central Falls,	"
O'Neil, Henry Francis	Providence,	"
Peckham, Herbert James	Middletown,	"
Pike, David	Riverpoint,	"
Rose, George	Mooresfield,	"
Steere, John Purkis	Chepachet,	"
Strout, Robert Bruce	Wakefield,	"
Taylor, William James	Slatersville,	"
Tucker, Attmore Arnold	Wakefield,	"
Van Horne, Mahlon Augustus	Newport,	"
Wheeler, Charles Noyes	Shannock,	"
Wilson, Henry Paige	Allenton,	"
Worden, Cornelia	Allenton,	"

SPECIALS.

Alexander, Walter Putnam	Abbott Run,	R. I.
Braman, Benjamin	West Kingston,	“
Brown, May	Narragansett Pier,	“
Burgess, George	Rockland,	“
Champlin, Frank Everett	Matunuc,	“
Clarke, John Gideon	West Kingston,	“
Cochrane, George William	Franklin,	“
Crandall, Henry	Green Hill,	“
Dunn, Lawrence Thomas	Chepachet,	“
Eldred, Mabel DeWitt	Kingston,	“
Greene, Lulie Lynch	Carolina,	“
Hamblen, John Franklin	Carolina,	“
Hartwell, Charles	Littleton,	Mass.
Kingsley, Walter Burnside	Hamilton,	R. I.
Magill, Arthur Reginald	Newport,	“
Oatley, George Nathan	Peace Dale,	“
Pratt, Edith Forrester	Kingston,	“
Sherman, Abbie Gertrude	Kingston,	“
Wells, Grace Perry	Kingston,	“
Whitford, John	Perryville,	“
Willis, Libbie Winnifred	Kingston,	“
Wright, Silas Wilber	Wakefield,	“

SPECIALS IN WOOD CARVING.

Adams, Mrs. H. F	Kingston,	R. I.
Auel, Mrs. Charles	Kenyon,	“
Armstrong, Mrs. Charles, Jr	Wakefield,	“
Carmichael, Mrs. George	Shannock,	“
Clemens, Julia	Wakefield,	“
Green, Aldana	Kenyon,	“
Green, Nellie	Kenyon,	“
Hudson, Lila	Wakefield,	“

King, Jonie	Kenyon,	R. I.
King, Lizzie	Kenyon,	"
King, Mrs. George	Kenyon,	"
Kenyon, Alice	Carolina.	"
Metcalf, Alice	Carolina,	"
Northrup, Florence	Rocky Brook,	"
Pope, Angela	Rocky Brook,	"

Post Graduates	6
Graduates, 1894	17
Seniors	8
Juniors	8
Sophomores	16
Freshmen	28
Specials	22
Specials in Wood Carving	15
Total, counting none twice	114

TREASURER'S REPORT.[1]

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

1894.	DR.		
Jan. 1.	To cash balance on hand	$49	23
Dec. 31.	State of Rhode Island	20,000	00
	J. H. Washburn, President, for students' board, etc.	2,750	00
	Cash received from Morrill Fund	13,038	90
	" " interest	39	52
		$35,877	65
1894.	CR.		
Dec. 31.	By Salaries	$5,503	69
	Apparatus	354	88
	Library	348	39
	Postage, stationery, and printing	362	57
	Freight and expressage	782	10
	Traveling	533	96
	Tools and machinery	859	03
	Labor	3,128	77
	Store	1,335	64
	Furniture	1,138	27
	[2]Incidentals	3,299	09
	Laboratory supplies	1,357	90
	Construction and repairs	4,814	29
	Provisions	2,813	23
	Boarding expense	999	30
	[3]Cash balance on hand	8,246	54
		$35,877	65

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[1] The report of the Morrill Fund is published after June 30 of each year.

[2] This includes cost of coal, gasoline, etc.

[3] This sum will be used for a barn and dairy, by vote of the General Assembly at the May Session.

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of eight thousand two hundred forty-six dollars and fifty-four cents (\$8,246$\frac{54}{100}$).

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. D. GREENE,
Auditing Committee.

THE RHODE ISLAND STATE AGRICULTURAL EXPERIMENT STATION *in account with the* UNITED STATES APPROPRIATION.

1894.	DR.		
	To receipts from the Treasurer of the United States as per appropriation for the year ending June 30, 1894, under act of Congress approved March 2, 1887		$15,000 00
1894.	CR.		
June 30.	By Salaries	$8,707 06	
	Labor	2,305 33	
	Supplies and repairs	1,200 00	
	Freight, expressage, etc.	429 47	
	Library and printing	849 41	
	Tools and machinery	382 31	
	Scientific instruments	90 06	
	Chemical apparatus and supplies	125 64	
	Furniture and general fittings	29 12	
	Live stock	323 19	
	Traveling	281 25	
	Incidentals	99 58	
	Building	177 58	
			$15,000 00

THIS CERTIFIES THAT WE, the undersigned, authorized Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30, 1894, and that we find the receipts for the time named to have been $15,000, and that the same has been expended, for which satisfactory vouchers, correctly classified as above, are on file, and the same agree with the Treasurer's account, and there is no unexpended balance.

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. J. GREENE,
Auditing Committee.

I hereby certify that the above is a true copy from the books of the account of the institution named.

MELVILLE BULL,
Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

I hereby certify that the above signature is that of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION

1894.	DR.	
June 30.	To balance from last year	$8 59
	Rebate on Columbian Fair freight	4 97
	Station receipts	1,369 00
	State receipts Fertilizer inspection	1,666 38
	Interest	53 78
		$3,102 72
	CR.	
	By Labor	$709 43
	Supplies and repairs	1,948 90
	Roads, water supply, etc	49 90
	Fertilizer inspection	309 11
	Incidentals	50 10
	Balance on hand	35 28
		$3,102 72

MELVILLE BULL, *Treasurer, in account with* UNITED STATES **SPECIAL APPROPRIATION.**

1894.	DR.		
June 30.	To balance on hand	**$1,639**	07
	Interest	**105**	18
		$1,744	25
1894.	CR.		
June 30.	By Library and printing	**$159**	78
	Scientific instruments	**2**	50
	Balance unexpended	**1,581**	97
		$1,744	25

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, ending June 30, 1894, and the vouchers corresponding therewith, and find the same correct.

GARDINER C. SIMS,
NATHAN D. PIERCE,
CHAS. J. GREENE,
Auditing Committee.

College of Agriculture
and
Mechanic Arts.

Kingston, R. I.

1896.

Eighth Annual Report

OF THE

CORPORATION, BOARD OF MANAGERS,

OF THE

R. I. College of Agriculture and Mechanic Arts,

MADE TO THE

GENERAL ASSEMBLY,

AT ITS

JANUARY SESSION, 1896.

PART I.

Part II, Experiment Station Report, is printed under separate cover.

PROVIDENCE:
E. L. FREEMAN & SON, STATE PRINTERS.
1896.

Rhode Island College of Agriculture and Mechanic Arts.

CORPORATION.

Hon. MELVILLE BULL	Newport County.
Hon. C. H. COGGESHALL	Bristol County.
Hon. CHARLES J. GREENE	Washington County.
Hon. HENRY L. GREEN.	Kent County.
Hon. GARDINER C. SIMS.	Providence County.

OFFICERS OF THE CORPORATION.

Hon. C. H. COGGESHALL, President	P. O., Bristol,	R. I.
Hon. HENRY L. GREEN, Vice-President	P. O., Riverpoint,	R. I.
Hon. CHARLES J. GREENE, Clerk	P. O., Kenyon,	R. I.
Hon. MELVILLE BULL, Treasurer	P. O., Newport,	R. I.

REPORT.

To His Excellency Charles Warren Lippitt, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1896:

I have the honor herewith to submit the Eighth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

Since our last annual report, the College has lost its dormitory by fire. This loss was due to the fact that we had no water supply. The State has since granted us an appropriation for the rebuilding of the dormitory and the construction of a water supply. I submit a letter from the President of the College stating its financial condition as a result of the fire and of the construction of the water supply; the report of Captain W. W. Wotherspoon, superintendent of construction of our new dormitory; and the annual report of the Faculty.

CHANDLER H. COGGESHALL,

President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

LETTER OF THE PRESIDENT.

KINGSTON, R. I., Dec. 31, 1895.

HON. CHANDLER H. COGGESHALL, *President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, Kingston, R. I.:*

DEAR SIR:—In stating the condition of affairs at the Rhode Island College of Agriculture and Mechanic Arts, I would respectfully call your attention to the fact that on January 1, 1895, we had just completed extensive alterations in the dormitory, which burned. We had refitted the room used as a chapel for a botanical laboratory, furnished a physical laboratory in the basement, and put in a very comfortable bath room on the second floor. The Board of Managers had decided to ask the legislature for a new building to be used as a recitation and drill hall, and also to contain a large room where the whole College could assemble for lectures and chapel exercises.

On November 12, 1894, Capt. W. W. Wotherspoon reported at the institution for duty as professor of military science and tactics, having been appointed November 1 by President Cleveland. He has given instruction in military tactics and in the company movements. The object of this is to teach our students to become officers. Text-book work in military tactics is required, also signal drill and target practice. The government has issued arms and ammunition for all the students, in addition to the two field pieces of artillery; but as the College is in session only from the middle of September to the middle of June (during the cold weather), it is absolutely necessary for the health of the students that they have a place for drill under cover in comfortable quarters.

We have had no large class room. It was the desire of the Board of Managers to provide one in this recitation and drill hall. The estimated cost of the building was about $45,000. Its size was to be 40 x 120 feet, with a basement and two stories: the basement to be used for physical laboratories and bath rooms; the first floor, for chapel, reading and recitation rooms, and library; the second floor, for a drill hall and gymnasium. The College has over $10,000 worth of books and no place where they can be properly kept. Before the fire, it was deemed necessary to have this building; but since then it has become doubly necessary, as that deprived us of recitation rooms and laboratories. Only the basement of the new building is used for classroom purposes, as it is not safe to have expensive apparatus in a dormitory.

Another want which was noted by the Board of Managers before the fire was an adequate water supply. The fire destroyed a building, the first cost of which without heating facilities was $42,000, upon which the College had subsequently expended $3,000 in fitting up laboratories and bath rooms. The building burned in less than forty-five minutes; had there been a water supply, it could have been saved. There were Babcock fire extinguishers in the dormitory and two of them were used. They abated the fire for a time, but the wind was so high that nothing could be accomplished without a large quantity of water.

When the building burned, we had eighty students. It was imperative that something be done at once; it was the beginning of the year and our $10,000 appropriation for current expenses had been used. We had no money with which to make temporary arrangements except the $10,000 which was held by the treasurer as "an appropriation for a barn and other necessary buildings," the plans of which were being considered by the Board of Managers. Now there was urgent demand "for other necessary buildings." Within a week after the fire we had completed the carpenter shop, which was 40 x 27 feet; in two weeks were built the barracks, a building 24 x 110 feet with an L 12 x 15 feet; also a building for laboratory and classroom work in botany 38 x 18 feet, with three rooms upstairs which are used for photographic purposes and experiments in light,—all temporary buildings. The cost of the barracks, carpenter shop, and laboratory was $3,963; and in consequence of the fire, we have expended for furniture $1,681.

The legislature was asked to appropriate money to rebuild the dormitory and also to erect the recitation and drill hall. It granted only a portion of our request, by rebuilding the dormitory.

In the fire we lost $12,000 worth of apparatus, machines, and furniture. The State gave us nothing to replace this: and as some of it was absolutely essential to the continuance of our work, we were obliged to draw on that $10,000, which had been reserved for "barn and other necessary buildings." The students lost so much furniture in the fire, by leaving it to burn while they saved the College library, that the Board of Managers felt it right to help them replace some of their furniture, and gave each man the use of it while he was here. This was another expenditure unprovided for.

The legislature at the last session passed a law directing us to send a team to the depot to bring up students, and yet appropriated nothing for securing the same. At that time the College owned only two horses: one, used in the administration of the College; the other, constantly used in the horticultural department. The Experiment Station owned four horses, but they are needed for the regular work of the Experiment Station. Dr. Allen, who is an inspector from Washington and visits the institution once a year, and inquires into the expenditure of the appropriations, has impressed upon us the ruling of the Department of the Interior, that no government money can be used to execute a state law. This is a general principle. It became necessary for us to purchase a pair of horses, a large covered carriage, which transports nineteen pupils, and to procure a driver. The entire expense of the outfit will be $1,150 for the first year; the cost of keeping the team will afterwards be nearly $700 a year.

In asking for a new dormitory and water supply, the Board of Managers consulted Mr. Stone, of the firm of Stone, Carpenter & Willson, as to the expense of rebuilding the dormitory on the same lines. The old dormitory had cost $42,000; the west wall, left standing by the fire, was valued by Mr. Stone at $7,000, and he therefore estimated the cost of the new building at $35,000. When his plans for the new dormitory were sent us to work upon, we found that the roof which he put upon it was very different and much more expensive than the old. He had added a tower on the front of the building, the cost of which was $3,000, but this was necessary for hygienic purposes. In beginning to build, it was found that every window cap and sill in the old wall had been cracked by the fire and that the bow windows had spread; much of this had to be taken down and rebuilt. The least cost of repairing that wall was $2,500. The cleaning off of the quarry and excavating for the new drill hall, which we had hoped to build, cost $1,252; the removal of the debris from the cellar of the dormitory, $552; and the derricks and railroad iron procured to bring the stone up from the quarry to the building, $836. The Board of Managers deemed it wise when the new building was being constructed to wire it for electricity, which we may use as a means of lighting in the near future. That was an extra expenditure of $908, and the heating plant for the dormitory cost $1,500. These extra expenditures amount to over $10,000, and there was no money to use but that appropriated for the barn.

There remains at the present time a deficit of $4,950. It was the estimate of Capt. W. W. Wotherspoon, who had charge of the construction of the new dormitory, that the two buildings could have been built together for $5,000 less than if built separately, on account of the economy in working the quarry and carting the stone. I feel that the College should have the barn, because we have no proper place to keep stock and develop our agricultural

In regard to the water supply, bids had been asked for to complete a plant proposed by one of our professors; and it was found that this would cost $5,000. When the Board of Managers were ready to build in July, they considered the plans for the water supply inadequate. The mains and the stand-pipe were both too small; the price of iron had in the mean time greatly advanced; and altogether the work cost $2,500 more than the appropriation.

The number of students at the College this past year has been arger than ever before, notwithstanding the extremely trying experiences which the institution has passed through during the ast twelve months. We have at present insufficient room; our boarding department is so full that there are seats for only six more students, and the question arises How much does the State wish to develop the institution? Or in other words, What does it wish to do with the College? I might say that we give instruction o a class of men more than seventy per cent. of whom would never receive higher instruction, were it not for this College.

The number of women students at the College has increased rapidly during the past two years. Until recently they have been obliged to secure board at the farmhouses in the vicinity of the College. The Board of Managers felt that if they were to be responsible for the care and conduct of these students, proper dormitory accommodations must be provided, where they could be under the control of some person accountable to the Board of Managers. The farmhouse on our grounds was consequently remodelled into a woman's dormitory, capable of accommodating fourteen pupils; this required an expense of $1,056.

Considering our present condition, and in view of the fact that we have no funds, it would seem that an immediate appropriation for our relief should be granted, to make good the deficit on the dormitory of $4,950, and on the water supply of $2,500, together with the $10,000 of barn money, which was used for the above mentioned necessities, and also for the other expenditures.

REPORT OF SUPERINTENDENT OF CONSTRUCTION.

DECEMBER 29, 1895.

To the Building Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, Kingston, R. I.:

GENTLEMEN:—I have the honor to submit the following report of the construction of the dormitory and the expenditures made thereon so far as they are known to me.

Work was undertaken in a desultory manner on the foundations of the still burning dormitory in February and prosecuted to the best advantage until the 18th of March, at about which date a larger force of laborers was put on and everything was done to push the building to completion within the time specified by the Committee; it being the Committee's desire that the building should be completed and ready for use by the 1st of October following so that the fall term might open at or near the usual date. While pushing the work, your superintendent kept constantly in mind the need of caution in carrying to completion a building of such size and walls of such weight as the plans called for. It was evident that to put the building in such a state as would permit of its being occupied by the date specified, the stone walls would have to be completed by the twentieth or twenty-fifth of July. This gave just four months in which to build the walls to the fourth story. This limited time pointed to the necessity for a departure from the methods and material used in the construction of the original building. In the walls of that building large flat stones of irregular size and shape were used, with few locking stones or headers running from outer to inner faces of walls; the jambs for window and door frames were not cut to fit, flat ashler simply overreaching the frames; the beds of the stones were not cut to rest square and firm, dependence being placed upon the mortar, which with the slower method of building had ample time to set; for the same reason, probably, a cheaper quality of cement was used and the joints between ashler and backing not thoroughly filled. It was therefore decided to use the best possible mortar, to cut all stones to a square bed that they might rest firmly and take up the weight of the structure above, to cut all jambs for window and door frames, and to thoroughly secure the work by frequent binding by "headers." This, while making the walls much firmer and more secure than the original structure and permitting the rapid prosecution of the work, which would have been impossible if the older method of construction had been followed, added somewhat to the cost of the work. This additional cost I estimated at between $1,500 and $2,000 for the whole work. The result of the precautions would seem to have justified the additional expense, as not only was the building ready for use near the time designated, but no faults in the way of even the slightest settlement or even slight cracking of this mass of masonry has developed.

It will be remembered by your committee that the estimate upon which the bill for an appropriation for the rebuilding of the dormitory was based was made in great haste by Mr. Stone, of the firm of architects Stone, Carpenter & Willson. His estimate was made as follows: taking the cost of the original structure at $42,000, he estimated the value of the west wall left standing after the fire, together with the foundations, as worth one-sixth of the original cost, or $7,000, leaving $35,000 as the probable cost of rebuilding. This estimate was at fault in a number of ways. In the first place, at the time it was made it was not known that every window sill and cap, as well as all door sills and caps on that front, were broken by the heat and would have to be taken out and replaced. Each section of the water table on the west front was out cracked by fire and had to be cut out and replaced, and it was also found upon closer examination that the two bays in that wall and part of the straight wall were out of plumb, having been forced out of line by the falling roof. The plans when finally submitted called for a relative alteration of the west entrance, involving the cutting away of the lower part of the central wall and the putting in of the windows and a different size door from the original. It will be easily understood that the cutting away of so much of this wall and the proper setting of new and perfect stones in the place of those cracked and broken by the fire required the greatest care and skill. Only the best workmen could be put upon the work and progress was necessarily slow; the wall had to be cut through and wedged or jacked up to permit the work; all hollows and imperfections had to be filled with the best Portland cement. This was all the more necessary, as the planning of the new building did not permit of the wall being tied by the floor joists to the other walls as had been originally done; the floor joists ran parallel with the wall instead of perpendicular to it.

I estimate the cost of repairing this west wall at not less than $2,500. In the second place, in making the estimate no mention was made of the tower and the chimney running up eighty feet. There had been no tower on the old building, hence this was an additional expense. I estimate the cost of this tower at the very lowest at $3,000. In the third place, the estimate did not include cost of wiring the building for electricity, the actual cost of which was $908, nor of heating, the cost of which was $1,500.

The list of monthly bills for labor and material, audited by your superintendent, amounts at this date to $43,257.50. There are two additions to be made to this; one of $602 for plastering, and another of $230 for iron fire-escapes. These will bring the total expenditure up to $44,089.50, a seeming excess of $9,089.50 over the amount appropriated for the building. This seeming excess is explained as follows:

1.	Amount expended in excavating for drill hall	$1,252 39
2.	Cost of railroad and machinery	836 43
3.	Wiring building for electric lights	908 00
4.	Clearing rubbish from foundation	552 43
5.	Heating building	1,500 00
6.	Cost of repairing west wall	2,500 00
7.	Cost of building tower	3,000 00
		$10,549 25

If this amount is taken from the total expended, it will leave the cost of the building $33,940.25; or if the cost of repairing and putting in order the west wall be included, which might properly be done, it would give the cost of the building *as it was intended to* be built at the time of the estimate, $36,440.25, or $1,400 over the estimate.

In addition to these figures, it might be pointed out that the College has a well equipped quarry thoroughly opened for future work, with all necessary machinery for getting out stone; a railroad laid and equipped for future work; all machinery necessary for moving and handling stone on any new structures; a large collection of tools; stone cutter's shed, etc.,—which will materially reduce the cost of future work.

Attention is invited to the fact that the superintendent had nothing whatever to do with the purchase of material, it being specially understood that this was to be left in other hands. All purchases were, it is understood, made only after carefully canvassing the market; and the prices as a rule were low for the material purchased, which was in all cases the best of its kind. Whenever it was possible, bids were invited and the lowest bid was taken. To avoid any discussion in the future, I would recommend that bids for all material be invited through advertisements in the newspapers; the bids to be opened at a designated hour and place, and bidders being invited to be present at the opening.

In conclusion, I beg to state my opinion that the College has a well built and strong structure, free from flaws, of the best material, thoroughly and honestly built in all its parts.

All plans, papers, correspondence, time books, bids, etc., are herewith transmitted, and I am

Very respectfully, your obedient servant,

W. W. WOTHERSPOON.

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COLLEGE CALENDAR.

1896.

WINTER TERM.

January 13, 8:30 A. M.	Term begins.
January 30	Day of Prayer for Colleges.
February 22	Washington's Birthday.
April 3	Term ends.

SPRING TERM.

April 13, 8:30 A. M	Term begins.
—— ——	Arbor Day.
May 30	Memorial Day.
June 11	Senior Examinations begin.
June 19, 10 A. M	Entrance Examination.
June 21	Baccalaureate Sunday.
June 23	Commencement.

FALL TERM.

September 15, 10 A. M	Entrance Examination.
September 16, 8:30 A. M	Term begins.
—— ——	Thanksgiving Day.
December 23	Term ends.

1897.

WINTER TERM.

January 5	Term begins.

FACULTY.

JOHN HOSEA WASHBURN, Ph. D.,

PRESIDENT.

Professor of Chemistry.

CHARLES OTIS FLAGG, B. Sc.,

Professor of Agriculture.

LORENZO FOSTER KINNEY, B. Sc.,

Professor of Horticulture.

HOMER JAY WHEELER, Ph. D.,

Professor of Geology.

ANNE LUCY BOSWORTH, B. Sc.,

Professor of Mathematics.

ESSIE JOSEPHINE WATSON, A. M.,

Professor of Languages.

WILLIAM ELISHA DRAKE, B. Sc.,

Professor of Mechanical Engineering.

OLIVER CHASE WIGGIN, M. D.,

Professor of Comparative Anatomy and Physiology.

WILLIAM WALLACE WOTHERSPOON,

Captain of 12th Infantry,

Professor of Military Science and Tactics.

HARRIET LATHROP MERROW, A. M.,

Professor of Botany.

JAMES DE LOSS TOWAR, B. Sc.,

Associate Professor of Agriculture and Mathematics.

THOMAS CARROLL RODMAN,

Instructor in Woodwork.

FREDERICK ATHERTON LANE,
Instructor in Woodwork.

MARY POWELL HELME,
Instructor in Drawing.

ANNA BROWN PECKHAM, A. B.,
Instructor in English and History.

WILLIS THOMAS LEE, PH. B.,***
Instructor in Chemistry and Physics.

ARTHUR CURTIS SCOTT, B. Sc.,
Instructor in Chemistry and Physics.

GEORGE BURLEIGH KNIGHT,
Instructor in Iron Work.

SAMUEL CUSHMAN,
Lecturer on Beekeeping.

WARREN BROWN MADISON, B. Sc.,
Assistant in Horticulture.

GEORGE CLARENCE AMMONDS, B. Sc.,*
Assistant in Mechanics.

GEORGE ALBERT RODMAN, B. Sc.,**
Assistant in Mechanics.

SAMUEL WATSON SLOCUM, B. Sc.,**
Assistant in Mechanics.

JOHN FRANKLIN KNOWLES, B. Sc.,**
Assistant in Mechanics.

CHARLES SHERMAN CLARK, B. Sc.,
Assistant in Mechanics.

ROBERT ARTHUR WILBUR, B. Sc.,*
Assistant in Mechanics.

NATHANIEL HELME,
Meteorologist.

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* Resigned Feb. 1st, 1895. ** Resigned March 30, 1895. *** Resigned July 1st, 1895,

EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D.	President of the College.
CHARLES O. FLAGG, B. Sc	Director and Agriculturist.
H. J. WHEELER, Ph. D.	Chemist.
L. F. KINNEY, B. Sc	Horticulturist
SAMUEL CUSHMAN	Apiarist and Poultry Manager
J. D. TOWAR, B. Sc	Assistant Agriculturist
GEORGE M. TUCKER, B. Sc	Assistant Agriculturist
B. L. HARTWELL, B. Sc	Assistant Chemist
C. L. SARGENT, B. Sc	Assistant Chemist
GEORGE E. ADAMS, B. Sc	Assistant Horticulturist
NATHANIEL HELME	Meteorologist
BERTHA E. BENTLEY	Clerk.

The Experiment Station Council consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.

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THE COLLEGE.

HISTORY.

IN 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating $15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruc-

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* See Bulletin No. 1 of Experiment Station.

tion in agriculture and mechanic arts as others afforded tha
genuine agricultural and mechanical colleges. So great w
dissatisfaction among the citizens of Rhode Island at the ab
of these educational advantages, that they were determin
have the Hatch Agricultural Experiment Station located
bona fide agricultural educational institution.

The Rhode Island State Agricultural School was estab
according to Chapter 706 of the Public Laws, passed M
1888. (See Fifth Annual Report, page 6).

The United States Congress, on August 30, 1890, passed a
known as the new Morrill Bill. This appropriated for the f
support of the agricultural and mechanical colleges a su
ginning with $15,000, and continuing with a yearly increa
$1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the b
of the act of Congress, the General Assembly amended Ch
706 of the Public Laws, (for text see Fifth Annual Report,
12), incorporating the Rhode Island College of Agricultur
Mechanic Arts.

Since September, 1892, the institution has been conducte
college basis, with an entirely new course of study.

On April 19, 1894, the Legislature passed an act autho
the State Treasurer to pay Brown University the sum of $4
in consideration of which the University was to turn over
State the proceeds of the original Land Grant of 1862, a
withdraw from the United States Supreme Court its suit fo
Morrill Fund.

GROWTH DURING 1895.

On Sunday, the twenty-seventh of January last, at abo
o'clock in the forenoon, at the time when most of the young
and faculty were at church, College Hall, the only dormitor
nected with the College, caught fire and burned to the g
in less than one hour. At that time, the wind was registeri
the anemometer the rate of forty miles per hour. There w

water supply, and the small tank full of water in the attic was cut off by the fire. The fire extinguisher checked it for a moment, but nothing except a large volume of water could save the building. The loss of the building amounted to \$45,000; and apparatus, tools, machinery, books, and furniture were destroyed which cost \$12,000. From this loss the institution will not recover for years.

Upon the old foundation, a new dormitory of ampler accommodations has been built, which was occupied on the tenth of October. Temporary buildings were constructed shortly after the fire to be used as barracks, carpenter shop, and recitation rooms. They continue to be so used except the barracks, which has been fitted up as a temporary physical laboratory, library, and reading-room. It is dangerous to have so much valuable material, over \$2,000 worth of physical apparatus and at least \$4,000 worth of books, stored in such a temporary wooden structure, which must be heated by stoves. The College is sadly in need of recitation rooms, laboratories, and drill hall. There is no adequate place for instructing the students in military science and tactics, although the government has liberally supplied the institution with \$8,000 worth of arms and other material for instruction and has detailed an army officer, Capt. W. W. Wotherspoon, to teach in this department, which is of so much value to the State. It would seem to be a duty of the State to provide suitable quarters for instruction in military drill and tactics. In the horticultural department, glass structures are much needed. During the year, Arthur C. Scott, B.Sc., has been appointed instructor in chemistry and physics; and Charles S. Clarke, B.Sc., assistant in mechanics. There have been more students than ever before, and the scholarship and efficient work of the College are steadily improving.

Valuable additions of apparatus and books have been made during the past year to the working facilities of all departments. Grateful acknowledgment is made of gifts of minerals from the Smithsonian Institute; agricultural books from President H. H.

Mountain plants from Miss Adelaide Smith ; forty New Hampshire plants from Miss Fanny E. Langdon ; two hundred specimens of Michigan and Ohio plants from a friend of the College ; a full set of War Records with maps, through the courtesy of the Hon. Nathan F. Dixon ; a number of valuable reports from the State Board of Agriculture of this and other States ; Report from the State Board of Health ; Health Reports from the City of Newport ; Records from the Rhode Island Historical Society ; a plough and hoe, such as are used at the Azore Islands, which were brought here by Dr. Philip K. Taylor ; a spinning-wheel for the studio from Miss Lizzie Robinson ; and various articles from other friends.

REQUIREMENTS FOR ADMISSION.

Candidates for admission must bring testimonials of good character and be not less than fifteen years of age. The requirements for admission to the College are necessarily low, on account of the deplorable condition of our district schools. They embrace both an oral and written examination in advanced arithmetic, geography, English grammar, and United States History. Each candidate will be required to write a short composition upon a subject announced at the time of the examination. The composition will be expected to show familiarity with the works mentioned below : Hawthorne's Wonder Book, Dickens's Christmas Carol, Irving's Sketch Book, Scott's Lady of the Lake, Longfellow's Evangeline. Applicants for the regular course will find some knowledge of algebra of great assistance. On and after September, 1898, an examination in algebra through simple equations of two or more unknown quantities will be required.

ADMISSION TO ADVANCED STANDING.

Graduates of high schools, and others who have had a sufficient amount of high school or college work, may enter in advance any higher class for whose work they are prepared.

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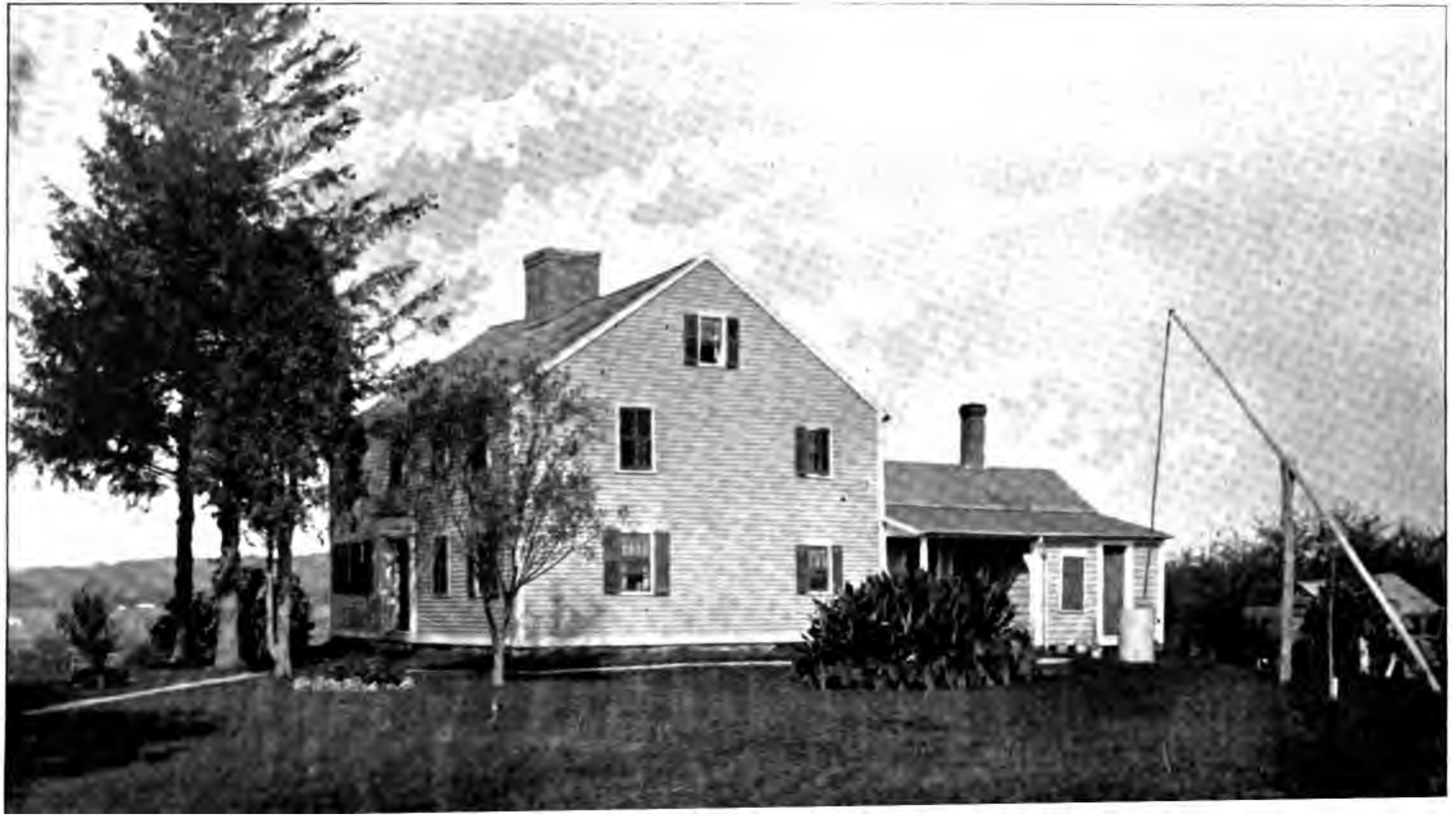

OPPORTUNITIES OFFERED TO WOMEN.

During the past year, the College has prepared excellent accommodations for young women, by furnishing a dormitory. Miss Anna B. Peckham has been made preceptress, having full charge of the young women at all times. Comfortable waiting and study rooms have been fitted up in another building for the use of the young women day students. The same courses that are offered to men are open to women, together with special courses which substitute for agriculture,—science, language, mathematics, and art.

EXPENSES.

Expenses at the College are as follows: Tuition free to Rhode Island students; table board at $3.00 per week; necessary text books, fuel and lights at cost; physical laboratory expenses for breakage, if the student is ordinarily careful, $1.00 per term; chemical laboratory charges, $3.00 for chemicals during each term of qualitative analysis; in the shops, $1.00 per term for the use of tools; room rent, $5.00 per annum, or $2.00 per term; gas, an average of $1.50 per term. Students are required to provide their own furniture and bedding; and if aid is needed, it will be given by the President, for whom special rates are made by the dealers. A uniform for military drill is also required; this uniform may be worn every day if the pupil chooses. Whenever a student is measured for a uniform or for any part of one, a corresponding deposit must be made. The price of a full uniform is $15.50. The only other expense is for heavy laundry work, 50 cents a dozen, 2 cents each for collars and cuffs. All clothing should be distinctly marked. Packages sent the students by express or freight in care of the College, will be taken from the station to the College free of charge. Once at the beginning and at the end of each term, a team will go to the station to take or bring trunks and other luggage. Graduates pay the cost of diplomas, $5.00. No diplomas will be issued till the candidate has paid all term bills. Day students are required to deposit $10 per term in advance; and boarding students must either pay term bill advance, deposit $50, or give bond for $100, to insure the pay of all bills. No bond will be accepted from any member of faculty.

The labor of the students during class exercises, in the shop iron work, and in the horticultural and agricultural departm is a part of their instruction, and is not paid for unless sp arrangements be made with the professor in charge. All e work outside of the required hours of labor is paid for whe student is employed by the superintendent in charge. A li amount of work about the buildings, on the farm, at the Ex ment Station, and in the laboratories may be furnished to t students who are desirous of assisting themselves.

EXPENSES FOR YOUNG WOMEN.—Board including room-re $3.00 per week; fuel and lights are supplied at cost. Room furnished, with the exception of bedding and towels. Other eral expenses are given above. The young women have an o tunity to do their own washing and ironing.

PUBLIC WORSHIP.

The students are expected to be present at chapel exer every morning, and on Sundays to attend service in some ch at least once a day. A branch of the Intercollegiate Young M Christian Association is doing good work among the stud meetings are held every Wednesday evening.

DEPORTMENT.

The rule for the conduct of the young men is, "Be gentle Students who do not understand the elements of gentlem conduct will not continue to be members of the institu Negligence or absence from class duties of any kind wi vigorously opposed. The following regulations concerning sences are rigidly enforced.

1. Students shall go to each professor or instructor for excuses in his or her department.

2. An application for an excuse shall be made, if possible, beforehand; if not, at the first recitation after the student's return; otherwise, the absence will be considered unexcused.

3. A students may be absent from 10 per cent. of the total number of recitations in each subject for each term, without excuse.

4. An unexcused absence in excess of this number shall dismiss a student from the institution.

5. Attendance at Chapel exercises shall be treated like attendance upon any class, except that application for excuses from the same must be made at the President's office on Tuesdays, at 8.40 A. M.

LOCATION.

The College is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles from the railroad station. A macadamized road leads from the grounds to the station, insuring at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with twenty-one trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

GENERAL AND AGRICULTURAL CHEMISTRY.

Instruction in chemistry begins with the third term of t Sophomore year, and consists of recitations and lectures wi laboratory work. This course is continued during the first te of the Junior year; and there is laboratory work in qualitati analysis throughout the year. The second term, Junior year, devoted to organic chemistry; the third term, to agricultu chemistry, which is continued through the first term, Senior yea The instruction in agricultural chemistry consists of lecture and recitations with laboratory work upon artificial digestion analysis of soils, fodders, and fertilizers, milk, butter, and cheese tests for poisons in the stomachs of different animals; analysis of fruits for sugar, starch, and albuminoids; and the study of chemical changes in soils. Instruction in inorganic chemistry comprises recitations and laboratory work upon Remsen's advanced course in inorganic chemistry. Special illustrations, however, are given in the line of agriculture, physiology, and hygiene, for the purpose of making the chemistry of the farm and kitchen familiar to all. In the chemistry of the halogen conpounds, especial attention is paid to photographic chemistry and manipulation. This prepares the students for a special course in photography, which may be taken as an elective in the study of chemistry.

Text books: Remsen's Inorganic Chemistry (advanced course), Remsen's Theoretical Chemistry, Remsen's Organic Chemistry, Orndorff's Laboratory Manual, Appleton's Qualitative and Quantitative Analysis.

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The Freshman class study physical geography during the first term. They pay special attention to the scientific phases of it, to the chemistry and geology of the soils, the influence of air and water on the same; and much reading and time are expended on the flora and fauna of the different countries. Warren's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes, are thoroughly studied during the term. Five hundred lantern slides illustrating ethnological subjects are projected and explained before the class. ·This course seems especially valuable to introduce the student to the scientific studies which are to follow.

PHYSICS.

The department of physics is now well supplied with apparatus to meet the requirements of this subject. A temporary laboratory has been provided for the practical work, with an apparatus room adjoining. The elementary course, consisting of recitations and laboratory practice, extends through the Sophomore year, and is required of both agricultural and mechanical students. Mechanics and heat are studied in the fall term; magnetism and electricity, in the winter term; sound and light, in the spring term. This course, particularly the laboratory work, is very similar to the Harvard Course B. An advanced course is offered as an elective to students who have satisfactorily completed the elementary course.

AGRICULTURAL GEOLOGY.

The course in agricultural geology embraces structural, dynamical and historical geology, particular attention being paid to the first mentioned subdivision. A careful study is made of those minerals and rocks of importance in the formation of soils, of the agencies by which their decomposition is effected, and of the compounds which result. In this connection, the instruction is designed to familiarize the student with the desirable mineral and physical features of soils, with those compounds the presence of which is undesirable or which may give rise to a greater or l degree of soil sterility, and with the means by which such con tions may be avoided or overcome. A proportionate amount time is devoted to the history of those natural deposits of parti lar interest to agriculturists; such as, nitrate of soda, the Germ potash salts, and phosphates of various kinds.

BOTANY.

The required work in botany for students in mechanics cove two terms; and for students in agriculture, three terms. The fir two terms are devoted to the study of a few groups of plants fro the lowest to the highest. Flowering plants of economic impo tance are studied in the third term. Work may be elected b agricultural and mechanical students as indicated in the Cours of Instruction.

During the year, the College has subscribed to Ellis and Eve hart's Fungi Columbiani and to Seymour's Grasses and Grass-li Plants of North America. A collection of plants to show devic for the dissemination of seeds has been started by the agricultu students, and a herbarium of plants growing in the vicinity of t College has been begun.

COMPARATIVE ANATOMY AND PHYSIOLOGY.

There have been no changes in the studies pursued in this d partment since the last report. They are as follows:

First year—Elementary Anatomy and Physiology through th winter and spring terms.

Third year—Zoölogy through the spring term.

Fourth year—Advanced Anatomy and Physiology, Comparati Anatomy, Comparative Physiology and Microscopic Anatom through the entire year; Veterinary Science during the wint term; Constitution of the United States, together with Sta County and Town Government, through the fall term; Politic

Economy and Sociology through the winter and spring terms; Physiological Psychology through the spring term.

This department has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration, there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Leuckart's zoölogical wallcharts, and other charts and diagrams of our own make, (5) ample blackboard facilities of which much is made, (6) chemical and physical apparatus, (7) all necessary mechanical appliances. The collection of skeletons of all the domestic animals cannot be excelled. In the class of birds, there have been added all the species of Rhode Island, comprising some 270 individuals. These prove of exceptional interest and stimulate inquiry because of their local habitat and more or less familiar mien. In the collection are found the skeletons of the great classes of birds showing striking structural peculiarities. It is also proposed to add the nests and eggs of all those species of the collection which nest in the State. It will thus be seen that there is an exceptionally good equipment for teaching the courses in zoölogy, physiology, and anatomy, both human and comparative, which are so liberally provided for in this College.

Apparatus is being collected for the course in experimental psychology. The course occupies but one term and the time given to experimentation is limited. The demonstrations are simple mechanical appliances to illustrate the sensations and perceptions. But few experiments are attempted on the more complex mental time, and more special training than the College students can summon. The beautiful models and charts of the human brain, spinal cord, and organs of special sense, are most serviceable in teaching the mechanism and functions of the great nerve centres. The appliances in this department are so complete as to expedite the study in no small degree. It is believed that a more lively interest is thus created, that more ground is covered, and that a clearer comprehension of this branch is given than could otherwise be done in twice the time allotted to it. The same claim may be predicated of the whole range of biological studies.

AGRICULTURE.

The work of this department is intended to cover ground bot practical and theoretical in agricultural knowledge, not includ in other divisions, and to further impress upon the student t application of scientific principles to agriculture. The course f the first year is the same for both agricultural and mechanic students, and aims to begin with such subjects as may be som what familiar to them and about which they have some elementar knowledge. One afternoon in each week of the first term of th Freshman year is devoted to the study of farm buildings, the location and convenience of arrangement; farm machinery, it use and care; a discussion of general and special farming wit the arrangement of farm buildings and fields for the various kind of farming, including the subject of fences and fencing. The thir term is given to the subject of land drainage; the effect of wate upon the soil and growing crops; tile and other methods of draining; how drains act, and affect the soil; how to lay out a syste of drains; draining-tools and their use; laying tile, silt basi outlets, and care of tile drains. A little time will be devoted t the history, value, and cost of tile draining. Practical field wo is given in laying out drains, leveling, and preparing plans.

The agriculture of the first term of the Sophomore year assigned to the study of the breeds of live stock—horses, catt sheep, and swine; the history, characteristics, and value of ea for various purposes, with practice in tracing pedigrees from herd records and in the use of score cards in judging animals. For the study of animals, the stock of the College and Experiment Station as well as the herds of stock breeders in the vicinity are available. Two exercises each week of the first term are devoted to the study of farm crops, their relation to the soil and stock of the farm, their relation to each other, rotations and the planting, cultivating and harvesting of the various crops generally grown.

Two terms of the Junior year are given to the study of soils, manures, and fertilizers. This includes the relation of water, heat, light, and air to the soil as affecting plant growth and crop cultivation. Some time is given to the careful study of the manures made upon the farm ; their value, and the best course to pursue in handling them to prevent loss. Chemical and artificial fertilizers as plant food and as chemical agents in rendering inert material in the soil available to plants, receive the consideration due them. The student is taught how to learn what the soil requires and how to compound the material to supply the elements found lacking. The chemical and biological changes constantly taking place within the soil and their bearing upon the supply of available plant food, are considered ; and attention is paid to the influences tending to increase their activity.

Senior year agriculture is devoted to the study of the laws of breeding and stock feeding. Such subjects as heredity, atavism, fecundity, in and in breeding, cross breeding, influence of parentage and pedigree, are studied in their relation to the breeding of animals. The latter includes the compounding of feeding rations for specific purposes in the feeding of various classes of animals, and practice in the selection of such waste products used for feeding as will balance the coarse fodders grown on the farm to make a cheap and complete food to produce the most satisfactory results.

The farm, fields, and work of the Experiment Station are at all times available for the purpose of illustration. The students are not required to devote their time to manual labor in the common operations of the farm with which they are already familiar.

Skill in manual labor is the result of practice; and once the knowledge of and reason for any certain farm operation is acquired by the student, it is hardly wise for him to spend the time and opportunities of a college course in the acquiring of mere manual dexterity in farm operations. He can easily do that elsewhere. His time here can be used to better advantage.

Agricultural text-books suitable for class use have not yet reached the state of perfection found in those of other lines of study, and the labor of teaching is augmented by the necessity of lectures and the more frequent use of reference books. The College and Experiment Station libraries are valuable for this purpose. Collections of chemicals and fertilizing materials, grains, various commercial foods and by-products are used for the purpose of illustration and instruction.

The text-books used thus far are as follows:—Draining for Profit and Health, Waring; Horses, Cattle, Sheep and Swine, Curtis; Soils and Crops, Morrow and Hunt; Agriculture, Storer; Stock Breeding, Miles; Feeding Animals, Stewart.

HORTICULTURE.

Seven courses are offered in this department. Regular agricultural students are required to take three of these; the others are elective. Course I as given under Courses of Instruction is of an introductory character. The other courses provide for special study of garden vegetables, ornamental plants, fruits, diseases and insect enemies of orchard and garden plants, horticultural literature, and landscape gardening.

LANGUAGES AND HISTORY.

The subjects grouped under this head are English, German, French, Latin, and History.

English—comprising composition, rhetoric, and literature—is studied during the four years. In the Freshman year, a preparatory review is followed by an elementary course of rhetoric.

THE HORTICULTURAL DEPARTMENT.

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Written exercises are required, and there is a careful reading in the class room of representative works by famous authors, principally American, with the aim of developing early in the students a taste for literature. More advanced work in rhetoric and composition is given during the fall and winter terms of the Sophomore year, and the reading of American authors is continued. The winter and spring terms of the Junior year are devoted to general English literature. English history is studied at the same time, as it is thought impossible to understand an author apart from his age. Individual research is encouraged, and will increase, it is hoped, from year to year. Some attention will also be paid to contemporaneous literature. As far as possible, entire works of the most noted authors are critically read in class. Exercises in composition give opportunity for detailed treatment of special topics. An elective in English literature, designed to supplement the general course, is offered throughout the Senior year ; and during the fall and winter terms of the Senior year, students may elect essay writing and orations.

German is required throughout the Junior year and is elective during the Senior year. As far as possible, the language itself is made the medium of instruction, and the subject is studied in grammar work, dictation, conversation, and translation — from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts.

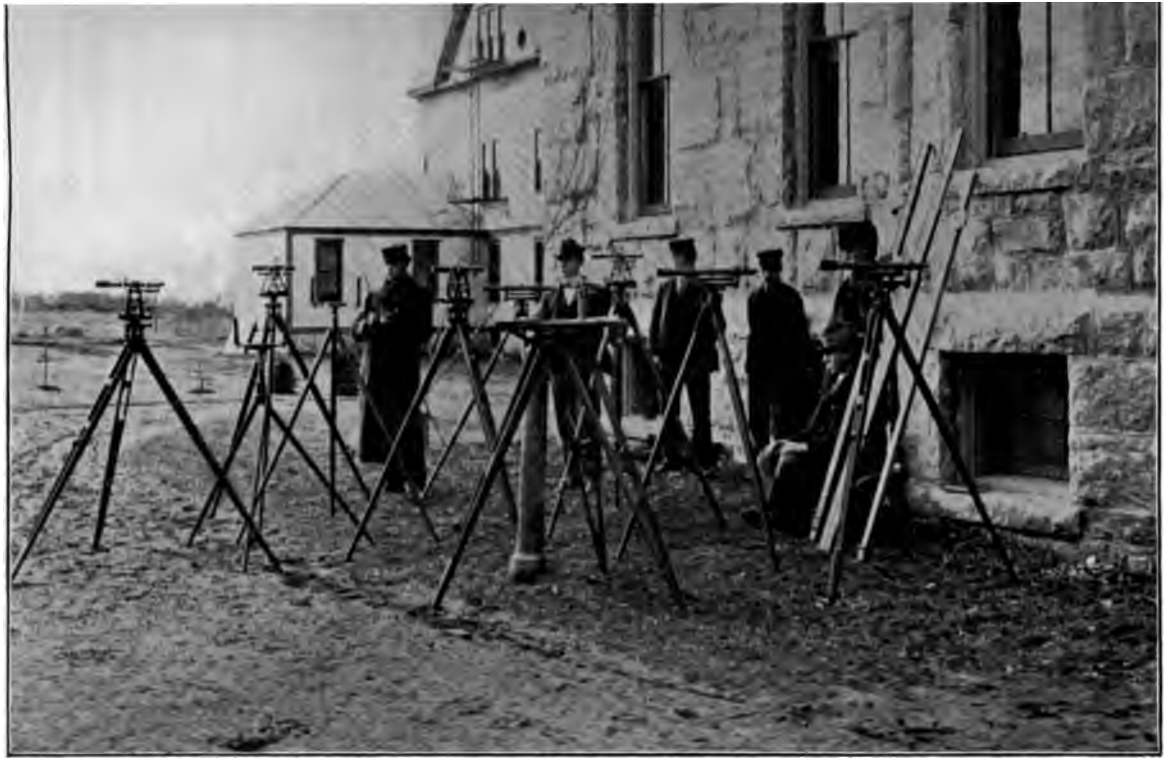
French is required during the Sophomore year, and is elective during the remaining two years. It is the aim of the department to make the instruction in this language similar to that given in German, with the expectation that the results will be greater in consequence of the longer time allotted to the subject. French, like German, is taught by means of grammar, conversation, dictation, translation, and composition. Progressive work throughout the three years will make it possible for the student at graduation to read with ease ordinary French, both literary and scientific.

Latin is an elective. The course, of four years, is essentially the same as that in the best preparatory schools.

In the fall term of the Freshman year, a careful review is made of American history, followed in the other two terms by outline work in general history. The method is topical. No one textbook is used, but students are taught to consult various authorities and to report upon what they have read. In the Junior year, English history is studied in connection with English literature; and an elective for special historical work is offered throughout the Senior year. A carefully selected library, which is constantly receiving additions, greatly enhances the value of these historical and literary courses.

MATHEMATICS AND ASTRONOMY.

The required work in mathematics extends through the first two years of the course for students in the agricultural department, and throughout the entire four years for those in the mechanical course. The time devoted to the subject in the Freshman year, is spent in the study of algebra and plane geometry. The work in algebra consists of a systematic drill in the fundamental operations, leading up to a study of the equation, both simple and quadratic, the theory of exponents, radicals, the progressions, the binomial formula, and the graphic representation of equations. Especial attention is given to the expression, by means of equations, of the conditions of a problem, and the exact methods of reasoning involved. In the course in plane geometry, beginning with the third term, particular stress is laid upon the original demonstration of propositions, in order best to develop the rigidly logical methods of thought which are the outcome of exact geometrical work. Numerical problems and practical applications are given whenever possible. This course extends through the first term of the Sophomore year and is followed by a course in plane trigonometry during the winter term. The fundamental formulas are developed and application of them is made in the solution of



A DIVISION OF THE SURVEYING CLASS.

right and oblique triangles. The subject of logarithms is studied and sufficient applications are made to thoroughly familiarize the student with this invaluable aid to computation. It is the aim here, as throughout the course, to select such problems and applications as shall have direct bearing upon practical subjects. Practical work in surveying is given during the spring term and this work is continued through the first term of the Junior year, by the agricultural students, while the mechanical students enter upon the subject of analytical geometry, studying first the subject of loci and their equations and the analytical demonstration of many geometrical theorems, and later developing the simpler properties of the conics. A short course in descriptive geometry is also given during the first term. A one-term course in solid geometry is given to the mechanical students, in which are studied the point, the line and the plane in space, the familiar polyedrons, the cylinder, cone and sphere, including the measurement of these solid figures. The work in calculus begins with the second term of the Junior year and continues through three terms. It includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiation and the integration of simple forms, illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for integration are studied and a short time is devoted to the interesting subject of curve-tracing.

The primary aim of the entire course in mathematics is to stimulate original work, to insist upon and develop a capacity for clear thinking and logical, systematic reasoning such as will prove invaluable in any department of study or life, as well as to achieve familiarity with such mathematical principles as are necessary for applied work.

A growing reference library affords an opportunity for wider mathematical reading, the value of which is constantly becoming more fully appreciated by the students.

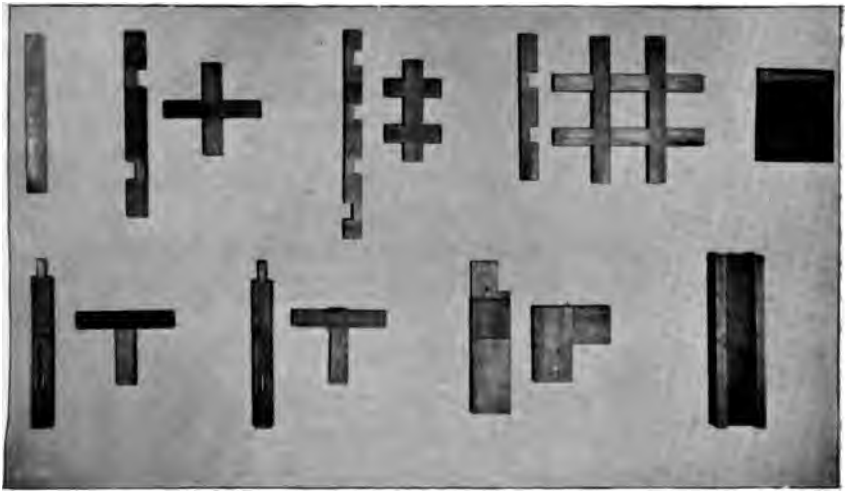
Several elective courses are offered by the department, and others will be added from time to time as may seem advisable. In pure mathematics courses are offered in college algebra, open to all who have completed the required work in algebra; in modern synthetic geometry, open to all students who have completed the required courses in algebra and plane geometry; in determinants and an advanced course in integral calculus, open, of course, only to students who have completed the required work in calculus.

In applied mathematics the department offers a course in su veying and civil engineering, giving opportunity to students who have completed the required work to carry the subject farther; a course in analytical mechanics, open to students who have completed one term of the required work in calculus; a course in practical astronomy, in which the simpler problems of practical astronomy are discussed.

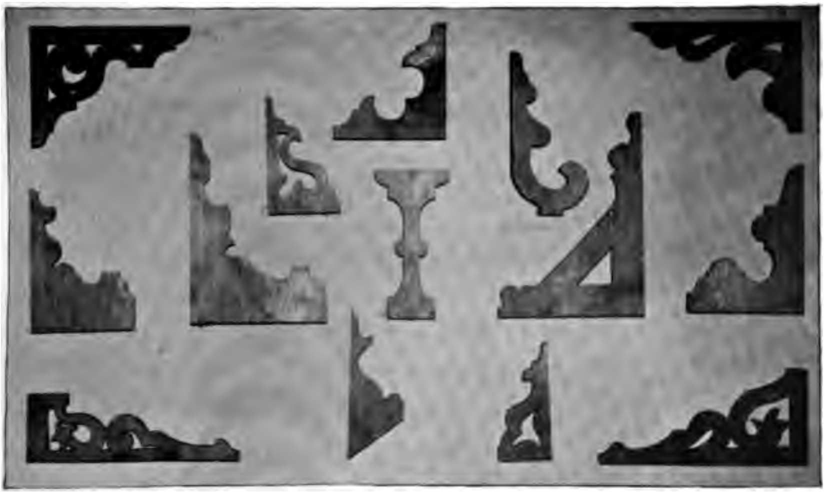
In astronomy, in addition to the course above mentioned, a lecture course in physical astronomy is offered in the spring term of the Senior year, the aim of which is to make the students familiar with the general characteristics of the various members of the solar system, and to emphasize the general laws which govern the universe. A four-inch equatorial telescope, an eighteen-inch celestial globe, a large collection of lantern-slides of astronomical phenomena and a small but carefully chosen reference library, add greatly to the resources of the department.

MECHANICS.

The object of this department is to give a technical and practical training to those who wish to prepare themselves for mechanical work. The College does not attempt to teach trades, but the courses of shop work that are offered are of the greatest value to a student who may enter a trade after graduation. Workrooms for instruction in bench-work in wood, wood-carving, wood-turning, pattern-making, forging, machine-shop work, and mechanical drawing are provided.



COURSE OF JOINERY.



COURSE IN SCROLL SAWING.

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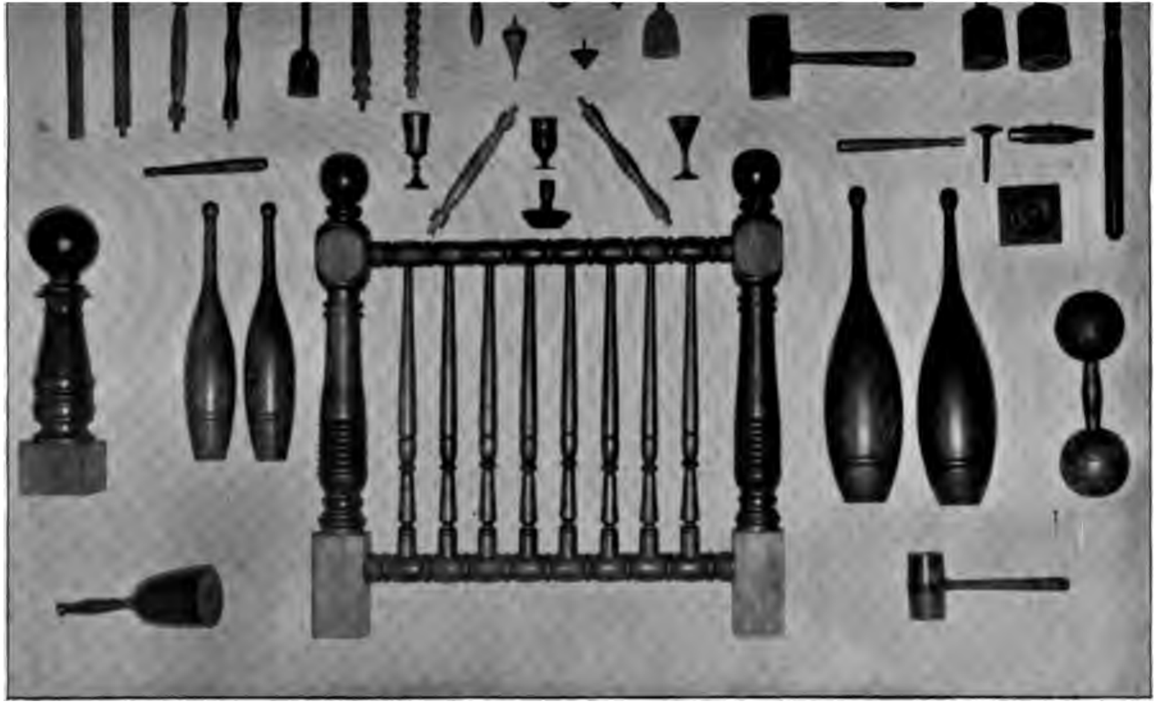

COURSE IN WOOD-TURNING

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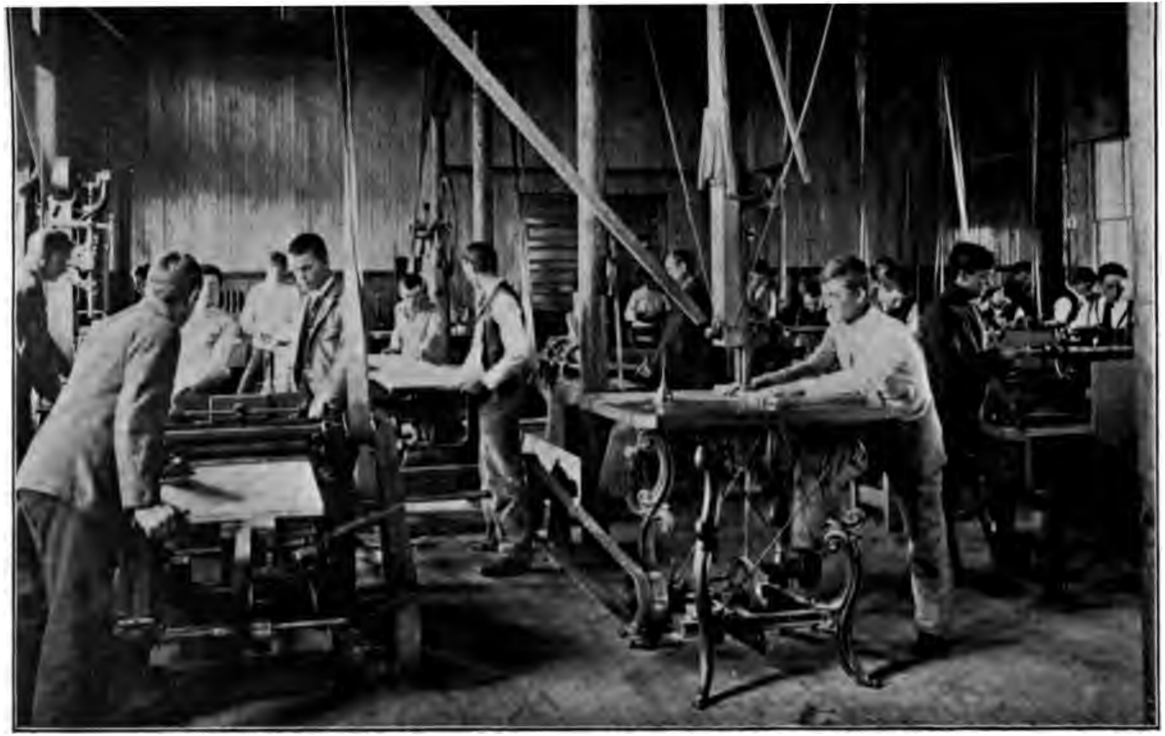

THE WOOD-WORKING MACHINERY.

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Students in the mechanical department receive instruction in
l of the above branches as a part of the regular four years'
urse. Students in the agricultural department receive instruc-
n in wood-working and forging, and may elect other work with
e advice and consent of the committee of studies. Young
men are given the opportunity to elect wood-carving at any
ne during the four years' course. During the winter term of
ree months, the shops are open to receive persons who may
sh to enter the College and take up special work of a trade
ture in any of the above lines. In addition to this work, these
dents may take a limited amount of time for the study of any
ated subject.

The carpenter shop contains benches and tools sufficient to
commodate twenty-four students at one time. The course is
signed to give skill and confidence in working the various kinds
wood, and also to impart a fair knowledge of the principles of
ilding and construction. A series of practical lectures upon
art of estimating the cost of various structures and construc-
s of wood is given to the agricultural students of the Sopho-
re year. The wood-turning room contains thirteen lathes, each
h its complete set of gauges and turning-tools. In the same
m are benches for pattern-making, and also power machinery
working wood; such as, circular saw, hand saw, jig saw, sur-
e planer, buzz planer, mortising machine, dowel machine and
ers. All students take wood-turning, and during the period
h in turn has practice under the direct charge of the engineer
the care of the shop boiler and engine. This engine is of thirty
se power; and besides furnishing power for the shop, drives a
K. W. dynamo for lighting the building. The work in pattern-
king given to the students in the mechanical department in the
nior year consists of the making of selected pieces to illustrate
principles of shrinkage, draft, finish, core-box making, built
work and the general requirements of pattern-making.

The forge shop will accommodate twelve students at one time.
contains twelve forges and anvils, a stock cutter, a bolt header,

a post drill, and is well supplied with all the hammers, tongs, and other forge and anvil tools necessary for complete work. A regular course is followed here as in other lines; and for the students of the agricultural department, the work is of such a nature as would be found about a farm. The various operations of drawing, bending, upsetting, and welding are taught and applied in the making of such useful pieces as staples, hooks, chains, and iron work for farm tools. The students of the mechanical department follow a similar course but in a direction more suited to the machine shop. Bolts, nuts, machine forgings, chisels, and lathe tools are made, and afterward put to practical use.

Only students in the mechanical department work in the machine shop. The course here is designed to give a sure knowledge and intelligent practice in the best modern methods of using the various tools; such as, lathes, planers, drills, milling-machines, and grinding machines. A course of hand work at the bench is offered, and includes instruction in chipping, filing, finishing and scraping. Each student in the machine shop builds a complete machine before finishing the course. Students of former years have made an engine dynamo, speed lathe, full set of arbors, set of nut arbors, and a variety of other tools. A small amount of work is given to the Senior class in experimental engineering. Among other things, the students make actual tests of engines and boilers and operate the machinery for testing iron, steel, and cements.

During the spring term of the Senior year, the class in mechanical engineering holds bi-weekly conferences; engineering subjects of general interest are taken up and discussed; and reports of these meetings are handed in, with conclusions. The following are some of the topics considered by the class of '95: Types of Steam Boilers, Furnaces, Boiler Feeders, Fuels, Lubricants, Gas and Heat Engines, Preparation and Use of Wood, Cutting Tools for Metals, Pumping Machinery.

Mechanical Drawing is taught throughout the Sophomore and Junior years. Students are required to keep notebooks, in which

PATTERN-MAKING

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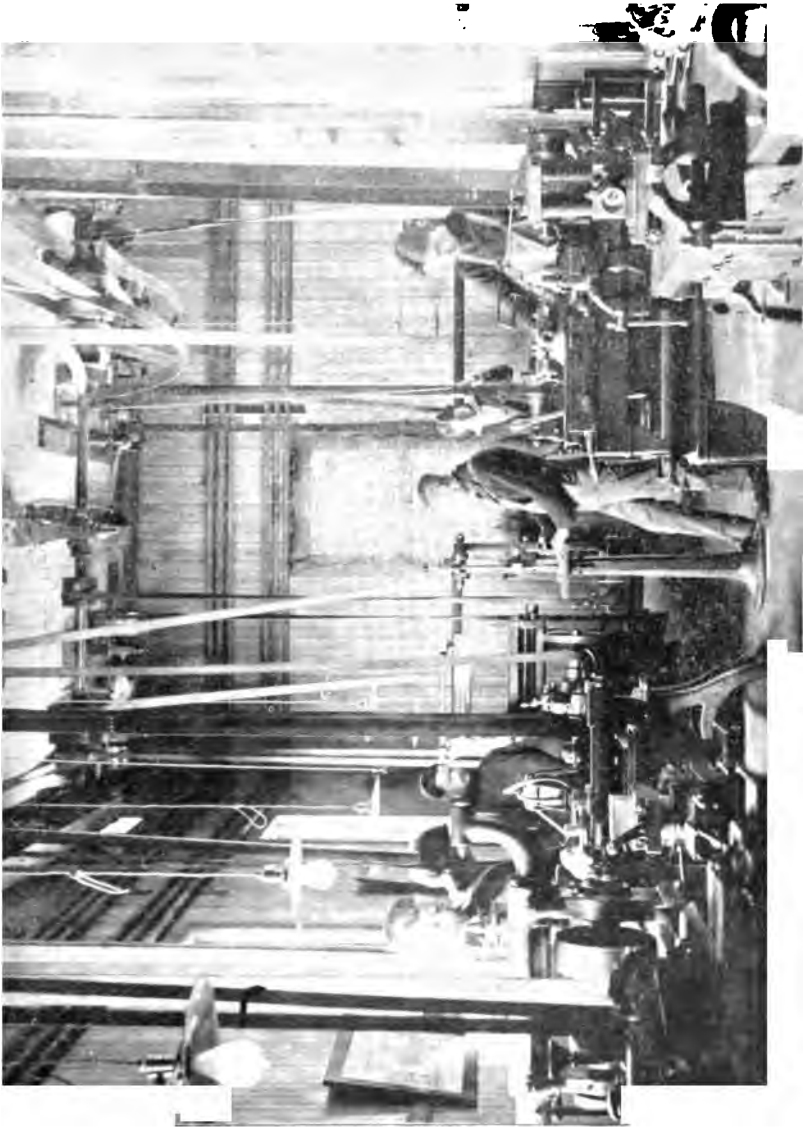

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INFANTRY DRILL.

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freehand sketches are made from models; and these sketches are afterward worked up into finished drawings. The making of working drawings for some machine completes the course. Practice in tracing and blue printing is given to all students. The course in drawing is designed to aid in the corresponding courses of shop work and not to produce professional draughtsmen.

FREEHAND DRAWING AND MODELING.—Freehand drawing is taught only in the spring and fall terms. Freshmen begin in the spring term with the study of values from objects and still life, continuing in the fall to draw and model from casts, with which the department is well supplied. In the Junior and Senior years, students may elect such work as they are prepared to take. Memory sketches of all objects drawn are expected of each student. The sketch class is an interesting feature of the department. This meets for one hour once a week and is conducted by its members, who pose in turn or find a substitute. These time sketches from life, without instruction, are of great benefit to the student, teaching him to note quickly the effect desired. Each student is required to leave at the College a specimen of his work. Modeling is limited to ten or twelve lessons in the Sophomore year. The library of the studio has a good nucleus of art books.

MILITARY SCIENCE AND TACTICS.

The military department is duly organized under Captain William W. Wotherspoon of the 12th Infantry, who was assigned to duty as Professor of Military Science and Tactics by the President of the United States, by special orders No. 257 from the war department, dated November 1, 1894.

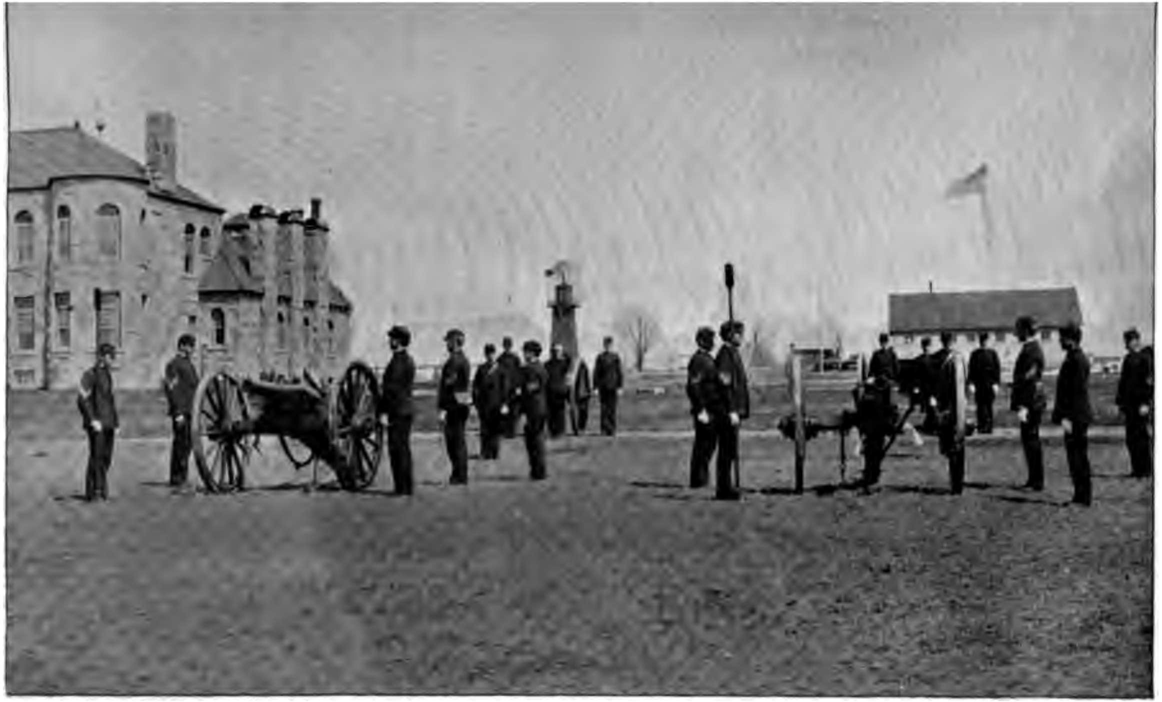
The male students of the College are organized as a company of infantry, which organization it is recommended they hold until an increase in the number of undergraduates will warrant a battalion organization. Of course this does not prevent instruction in both cavalry and artillery; indeed, it prepares the way for it.

The cadets were wholly uninstructed on November 12, 1894, when the military department was organized, and it was necessary to start from the foundation ; instruction was therefore given in the school of the soldier, without arms, during the term. Since making the last report, a full set of arms and equipments has been received, and the cadets have been drilled both without arms and in the manual, in addition to the regular infantry and artillery drlll. There have been two classes under instruction in signaling, and the Seniors and Juniors have started a course of military science. No effort has been spared to instill into the cadets a sense of the importance of the work undertaken, while producing a proper and healthful carriage of the body and that quickness and readiness to obey which are necessary in a soldier. The progress made in the very limited time has been most satisfactory, and evinces an enthusiasm and intelligence on the part of the cadets which cannot be too highly commended. They have been quick to learn, ready to obey, at all times respectful in deportment and neat in their habits.

The inspections in quarters have resulted in marked improvement in the rooms. All orders have been obeyed ; and as the inspections become more rigid, as they will, matters in the dormitory will be much changed.

The cadets have been uniformed at very moderate expense in a neat and handsome uniform of fine blue cloth, consisting of a blouse and trousers cut after the pattern worn by the U. S. naval cadets, with forage caps holding the coat of arms of the State of Rhode Island. This uniform is not only handsome and economical but will last a long time with moderate care. It is recommended that white collars and an overcoat be added to it, and that the overcoat be worn at all times out of doors during the winter. As at present organized, the company has a full set of officers and non-commissioned officers who are zealous and painstaking in their duties and show much promise.

The greatest difficulty found so far in this department has been the weather and the limited space under cover for drill. When the weather would permit, drill has been held out of doors ; other-



ARTILLERY DRILL.

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wise, in the temporary shed built for the purpose. No hours have been lost for any cause, however, and the drill hall and gymnasium now proposed will, it is hoped, be finished in time for next winter. When it is finished, the College will be equipped with a drill hall superior to that of any institution of learning in the United States, and with a gymnasium equal to the very best.

COURSES OF INSTRUCTION.

THE following courses of instruction are offered in the different departments. All studies required of regular students lead to the degree of Bachelor of Science.

CHEMISTRY.

1. General Chemistry, Briefer Course.—Non-metals. Recitations, lectures and laboratory work. *Spring term, Sophomore year;* recitations and lectures, *3 exercises per week;* laboratory work, *1 exercise of 2 hours per week. Required of all candidates for a degree.*

2. General Chemistry.—Metals. Lectures and recitations. *Fall term, Junior year; 3 exercises per week. Required of all candidates for a degree.*

3. Qualitative Analysis.—Laboratory work. *Fall term, Junior year: 2 exercises of 2 hours each per week; Winter term, 2 exercises of 3 hours each per week. Required of all candidates for a degree.*

4. Organic Chemistry.—Lectures and recitations. *Winter term, Junior year: 4 exercises per week. Required of Agricultural students.*

5. Agricultural Chemistry.—Lectures. *Spring term, Junior year: 3 exercises per week.* Laboratory work. *Fall term, Senior year; 2 exercises of 3 hours each per week. Required of Agricultural Students.*

6. Quantitative Analysis. — Laboratory work. *Spring term, Junior year ; 2 exercises of 3 hours each per week. Required of Agricultural students.*

7. Theoretical and Sanitary Chemistry and Quantitative Analysis.—Laboratory Work. *Throughout the Senior year ; 2 exercises of 3 hours each per week. Elective ; open to students who have taken courses 1 and 2.*

PHYSICS.

1. General Course.—Study of mechanics, pneumatics, hydraulics and accoustics ; Fall term. Electricity and magnetism ; Winter term. Light and Heat ; Spring term. *Throughout the Sophomore year.* Recitations, *3 exercises per week ;* laboratory work, *1 exercise of 2 hours per week. Required of all candidates for a degree.*

2. *Advanced Physics.* Throughout the year. Recitation, *1 exercise per week.* Laboratory work, *2 exercises of 3 hours each per week.* Elective ; *open to students who have taken course 1.*

3. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Spring term, Senior year ;* lectures, *3 exercises per week.* Laboratory work, *1 exercise of 2 hours per week.* Elective ; *open to students who have taken course 1.*

PHYSICAL GEOGRAPHY.

1. Warren's Physical Geography with required reading from reference books. *Fall term of Freshman year ; 3 exercises per week.*

GEOLOGY.

1. *Agricultural Geology.* Lectures and recitations. *Winter term of Senior year ; 2 exercises per week. Required of Agricultural students, elective for mechanical students.*

BOTANY.

1. Biology of Plants.—Comparative morphology and physiology are emphasized rather than the details of classification. Laboratory, reading and lectures. *Winter and Spring terms, Sophomore year; 4 exercises of 2 hours each per week. Required of all candidates for a degree.*

2. Systematic and Economic.—Orders of phanerograms of economic importance are studied from fresh and preserved material. *Fall term, Junior year;* recitation, *1 exercise per week;* laboratory work, *2 exercises of 2 hours each per week. Required of Agricultural students. Elective for mechanical students and specials who have taken course 1.*

3. Fungi.—A study of types of fungi with special reference to parasitic forms of economic importance. Laboratory, reading, and lectures. *Elective; open to students who have taken course 1. Hours arranged with instructor.*

4. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *Elective; open to students who have taken course 1. Hours arranged with instructor.*

PHYSIOLOGY.

1. Elementary Course in Human Physiology.—Lectures and recitations. Includes hygiene instruction, development of observing faculties. *Winter term, Freshman year; 3 exercises per week. Spring term, Freshman year; 2 exercises per week. Required of all candidates for a degree. Elective for Special students.*

2. Advanced Course.—Comparative Anatomy and Physiology. Presupposes knowledge of chemistry, embryology and zoölogy. Instruction demonstrative, comparative, and theoretical. *Fall*

term, Senior year; 4 exercises per week. Winter term; 3 exercises per week. Required of Agricultural students.

ZOÖLOGY.

1. Zoölogy;—General Course. Embryology;—Limited Course, introductory to the Zoölogy Lectures. Laboratory work with incubators, microscopical dissections, alcoholic preparations, and models. *Spring term, Junior year; 4 exercises per week. Required of Agricultural students.*

VETERINARY SCIENCE.

1. Veterinary Science.—Theory of practice. Based on course of comparative anatomy and physiology. *Spring term, Senior year; 4 exercises per week. Required of Agricultural students.*

PSYCHOLOGY.

1. Elementary Course.—Lectures, recitations, simple laboratory experiments. *Spring term, Senior year; 4 exercises per week. Elective.*

AGRICULTURE.

1. Farm Management.—Definition of agricultural terms; mixed husbandry; special farming; rotation of crops; general suggestions for agricultural practice; farm buildings—plans, size, location, arrangement, care; silos and ensilage; farm fences; fence laws; methods of constructing fences; economy in the selection of fences; portable fences; gates. Farm tools and implements; reapers, mowers, hay-tedders and rakes, plows, harrows, grain-drills, cultivators, rollers, etc. Value, selection, use, and care of farm tools. Lectures. *Fall term, Freshman year; 2 exercises per week. Required of all candidates for a degree.*

2. Farm Bookkeeping (Same as Mathematics 2).—Inventory; use of day-book, cash-book, and ledger on the farm; farm accounts; accounts with stock, fields, and crops; yearly statements; inter-

est and discount. Classroom practice. *Winter term, Fresh year; 3 exercises per week. Required of all candidates f degree.*

3. Drainage.—Drainage for Profit and Health (Waring). Sou of water; necessity of drains; kinds of drains; how drains how to lay out, build, and care for drains; drain tiles; cost value of drains; sanitary effects of drainage; practice in the of tools and instruments; details of the work. Text-book actual practice. *Spring term, Freshman year; 2 exercises hours each per week. Required of all candidates for a degree*

4. Farm Crops and their production.—Selection and pre tion of soil and seed; quantity of seed; time of seeding; vation and harvesting of various farm crops; hay crop, its in tance in agriculture; varieties of grasses; influence of ti cutting upon the value; method of storing; leguminous fo crops; corn as a grain crop; five types of corn; corn and crops for the silo. Other cereals—wheat, oats, barley and origin, history and value; root crops—potatoes, beets, tur carrots, and onions; miscellaneous crops—buckwheat, cabb pumpkins, squashes, field peas, tobacco, broom corn; weeds jury, dissemination, and eradication. Text-book and lect *Fall term, Sophomore year; 2 exercises per week. Required c Agricultural students.*

5. Breeds of Live Stock.—Horses, Cattle, Sheep, and S (Curtis). Horses—draft, coach, saddle, thoroughbred, trot ponies, care and selection. Cattle—dairy, general purpose, care, selection, and management. Sheep — short wool, mi wool, long wool, care, selection and management. Swine— breeds, medium breeds, small breeds, care, selection and ma ment. Origin of breeds; adaptability to climates and condit tracing pedigrees; scoring animals. Text-book and lect *Fall term, Sophomore year; 3 exercises per week. Requir Agricultural students.*

6. Agriculture (Storer). Relations of heat, air, and water to the soil; influence of soil, atmosphere, heat, light, and water upon the growth of plants; tillage and implements; natural sources of plant food; action of manures; special manures; phosphatic manures; nitrogenous compounds; green manuring; seaweeds; humus; farmyard manure; composts; modes of applying manures; night soil; history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. *Winter term, Junior year; 5 exercises per week. Spring term, Junior year; 2 exercises per week. Required of Agricultural students.*

7. Stock-Breeding (Miles.)—Breeding as an art; heredity; normal characteristics; diseases; acquired and abnormal characteristics; atavism (reversion); law of correlation; variation; fecundity; in and in breeding; cross-breeding; relative influence of parents; sex; pedigree; animal form and index of qualities; selections; period of gestation. Text-book. *Fall term, Senior year; 3 exercises per week. Required of Agricultural students.*

8. Feeding Animals (Stewart).—Composition of animal bodies; relative proportion of different parts of the carcass; elements of food material; digestion, its effect upon food; respiration and excretions; value of various animal manures; stock barns and their relation to the economy of feeding; principles of alimentation; early maturity; how to feed young animals; stock foods; nutritive ratio and feeding standards; definition of terms; calculation of ratios for various conditions and ages of animals; calculation of cost of rations, and their manurial value; soiling,—economy in land, fences, feed, and manure,—disadvantages, labor required; soiling crops; ensilage; economy of preserving crops in the silo; variety of crops that may be ensilaged; value of legumes and balancing rations; feeding for beef or milk; feeding horses, sheep and swine; cooked and uncooked food; cold and warm water; temperature of stables, and ventilation. Text-book.

Winter term, Senior year; 2 exercises per week. ***Required*** *Agricultural students.*

9. Fertilizers.—Study of the composition of the various agr cultural chemicals as sold in the markets; calculation of formul for special crops; calculation and value of various home-ma fertilizers. Lectures and classroom calculations. *Spring terr Senior year; 1 exercise per week. Required of Agricultur students.*

10. Dairying. American Dairying (Gurler).—The dairy co type, breeding, and management from birth to maturity; fee and management; branches of dairy husbandry; dairy utensil milking; care of milk; separators and butter accumulators; sep rating cream; ripening and churning; salting, working, packi and printing butter. The Babcock milk test of skim milk a cream; value of skim milk; building creameries. Text-book a lectures. *Winter term, Senior year; 2 exercises per week. El tive.*

11. *Apiary work.*—Classroom work upon the habits, care a management of bees with practical work in the apiary. *Spri term, Senior year; 1 exercise per week. Elective.*

HORTICULTURE.

1. Elementary Horticulture.—A general course in the study o fruits, vegetables and flowers. Plants, soils and atmospheres ar used as subjects of this study and students are required to wor out common problems involved in the cultivation of garden plant *Fall term, Junior year; 4 exercises per week. Required of Agr cultural students.*

2. Olericulture.—The study of garden vegetables. *Winter ter Junior year; 2 exercises per week. Elective.*

3. Floriculture.—The study of ornamental plants. *Spring ter Junior year; 2 exercises per week. Elective.*

4. **Pomology.**—The study of orchard and garden fruits. *Fall term, Senior year; 4 exercises per week. Elective.*

5. **Vegetable Pathology and Garden Entomology.**—The study of the diseases and insect enemies of garden plants. *Winter term, Senior year; 3 exercises per week. Required of Agricultural students.*

6. **Horticultural Literature.**—*Winter term, Senior year; 2 exercises per week. Elective.*

7. **Landscape Gardening.**—The study of expressions of plants, mainly of trees and shrubs, and ways of arranging them about buildings, avenues, etc., for the purpose of shelter and ornamentation. *Spring term, Senior year; 2 exercises per week. Required of Agricultural students.*

ENGLISH.

1. **Elementary Course.**—Preparatory review. Study of representative American authors. *Fall term, Freshman year; 5 exercises per week. Required of all candidates for a degree.*

2. **Middle Course.**—Rhetoric. Continued study of American literature. Composition. *Winter term, Freshman year; 5 exercises per week: Spring term; 4 exercises per week: Fall and Winter terms, Sophomore year; 2 exercises per week. Required of all candidates for a degree.*

3. **Advanced Course.**—General English literature and history. *Winter and Spring terms, Junior year; 4 exercises per week. Required of all candidates for a degree.*

4. **English Literature.**—Study of special periods and authors. *Throughout Senior year; 3 exercises per week. Elective; open to students who have taken courses 1, 2, and 3.*

5. **Orations and Essays.** *Fall and Winter terms, Senior year; 1 exercise per week. Elective for all seniors.*

GERMAN.

1. **Elementary Course.**—Grammar, dictation, conve reading of easy prose and poetry. *Throughout Junior exercises per week. Required of all candidates for a degr*

2. **Middle Course.**—Composition. Modern German *Fall term of Senior year; 3 exercises per week. Elective; students who have taken course 1.*

3. **Advanced Course.**—German Classics. History of literature. *Winter and Spring terms, Senior year; 3 exerc week. Elective; open to students who have taken courses 1*

4. **Scientific German.** *Winter and Spring terms, Senio 2 exercises per week. Elective; open to students who hav courses 1 and 2.*

5. **Reading at Sight.** *Throughout Senior year; 1 exerc week. Elective; open to students who have taken courses 1*

FRENCH.

1. **Elementary Course.**—Grammar, dictation, conve reading of easy prose and poetry. *Throughout the Sop year; 3 exercises per week. Required of all candidate degree.*

2. **Middle Course.**—Composition. Modern French *Throughout the Junior year; 3 exercises per week. E open to students who have taken course 1.*

3. **Advanced Course.**—French classics. History of Fre erature. *Throughout the Senior year; 3 exercises per week. tive; open to students who have taken courses 1 and 2.*

4. **Scientific French.** *Throughout the Senior year; 2 ex per week. Elective; open to students who have taken co and 2.*

5. **Reading at Sight.** *Throughout the Senior year; 1 e per week. Elective; open to students who have taken co and 2.*

LATIN.

1. Beginner's Latin Book. Grammar. *Throughout the Freshman year; 3 exercises per week. Elective.*

2. Cæsar. Composition. *Throughout the Sophomore year; 3 exercises per week. Elective; open to students who have taken course 1.*

3. Cicero. Composition. *Throughout the Junior year; 3 exercises per week. Elective; open to students who have taken courses 1 and 2.*

4. Virgil. Composition. *Throughout the Senior year; 3 exercises per week. Elective; open to students who have taken courses 1, 2, and 3.*

HISTORY.

1. American History. *Fall term, Freshman year; 2 exercises per week. Required of all candidates for a degree.*

2. General History. *Winter and Spring terms, Freshman year; 2 exercises per week. Required of all candidates for a degree.*

3. English History and English Literature.—(Same as English 3). *Winter and Spring terms, Junior year; 4 exercises per week. Required of all candidates for a degree.*

4. Special Work for Individual Students. *Spring term, Senior year; 3 exercises per week. Elective; open to students who have taken courses 1, 2 and 3.*

POLITICAL SCIENCE.

1. Science of Government.—Town, County, State, and United States. Their origin, development, and practices. Critical analysis of the Constitution of the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 exercises per week. Elective.*

2. Political Economy.—Elementary course. Based on Walker's

recitations, discussions, readings, original problems, citations fro the daily press, and essays. *Winter term, Senior year; 4 exercis per week. Elective.*

MATHEMATICS.

1. Algebra (Wells).—The fundamental operations, addition subtraction, multiplication, division of algebraic quantities; fac toring and its applications; the solution of simple equations wit one or more unknown quantities; involution; evolution; th theory of exponents; the solution of radical and quadratic equ tions; arithmetical and geometrical progression; the binomi theorem. *Freshman year; 5 exercices per week, Fall and Wint terms; 3 exercises per week, Spring term. Required of all can dates for a degree.*

2. Book-keeping (Bryant and Stratton).—Explanation of co mercial terms; single entry; double entry; use of books,—da book, cash-book, journal and ledger; practical exercises; origi accounts; farm accounts; mechanics' accounts; inventory; sta ments; partnership; interest; discount; exercise in commerc forms—bills, receipts, checks, notes, orders, drafts. *Winter t of Freshman year; 1 one hour exercise and 2 two hour exerci per week. Required of all candidates for a degree.*

3. Plane Geometry (Wells).—Rectilinear figures; the circl measurements of angles; the theory of proportion; similar fi ures; regular polygons; areas of polygons; the measurement the circle; original demonstrations. *Spring term of Freshma year; 4 exercises per week. Fall term of Sophomore year; 5 exe cises per week. Required of all candidates for a degree.*

4. Plane Trigonometry (Wentworth).—The derivation of t fundamental formulas; logarithms; the solution of right a oblique triangles; practical problems. *Winter term of Sophomo year; 3 exercises per week. Required of all candidates for a gree.*

5. Plane Surveying (Carhart).—Elementary course, field work, recitation and plotting. Use of compass, transit and levels; adjustment of instruments; stadia surveying. *Spring term of Sophomore year; 1 exercise per week of classroom work, 2 exercises of three hours each of field work per week. Required of Agricultural students.*

6. Road Construction and Leveling (Gillespie).—Location and construction of roads: mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term of Junior year; 3 exercises of text-book work per week and 1 exercise of three hours of field work per week. Required of students in the Agricultural course.*

7. Civil Engineering.—A continuation of course 5, embracing land, topographic and railroad surveying, the study of the use of engineer's tables and practice in overseeing under-classmen beginning the subject. *Fall and Spring term; 2 exercises of two hours each week. Elective; open to students who have completed course 5.*

8. Solid Geometry (Wells).—Lines and planes in space; diedral angles; polyhedral angles; polyhedrons; the cylinder, cone and sphere; measurement of the cylinder, cone and sphere; numerical examples and original demonstrations. *Spring term of Sophomore year; 3 exercises per week. Required of students in the Mechanical course.*

9. Analytical Geometry (Hardy).—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic section; higher plane curves. *Fall and winter terms of Junior year; 4 exercises per week. Required of students in the Mechanical course.*

10. Descriptive Geometry (Faunce).—Notation and elementary principles; problems on the point, line and plane; problems relating to the cylinder, cone and double curved surface of revolution; intersection and development of planes and solids; practical

problems. *Fall term of Junior year; 3 exercises per week. Required of students in the Mechanical course.*

11. Calculus (Taylor).—The differentiation of algebraic, trigonometric, logarithmic, exponential and anti-trigonometric functions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variable; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Winter and spring terms of Junior year, and fall term of Senior year; 3 exercises per week Required of students in the Mechanical course.*

12. Synthetic Geometry (Dupuis).—The line, point, and circle comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Spring term; 3 exercises per week. Elective; open to students who have completed courses 1 and 3.*

13. Determinants (Harris).—Proofs of fundamental propositions; determinant minors; development of determinants; rectangular arrays; reciprocal determinants; symmetrical, skew-symmetric, and skew-determinants. *Fall term; 3 exercises per week. Elective; open to students who have completed course 10.*

14. Advanced Calculus (Byerly).—An extension of course 10, including further discussion of definite integrals; imaginaries, length of curves, areas, volumes, the elements of elliptic integrals, and of the theory of functions. *Winter and spring terms; 3 exercises per week. Elective; open to students who have completed course 11.*

15. Analytical Mechanics.—(Same as Mechanics 21). *Spring term; 3 exercises per week. Elective; open to students who have completed one term of course 11.*

16. Higher Algebra (Taylor).—The theory of limits; differen

tiation; development of functions in services; permutations and combinations; probability; the theory of equations. *Fall term; 2 exercises per week. Elective; open to students who have completed course 1.*

ASTRONOMY.

1. Physical Astronomy. — Lecture course, illustrated with copious lantern slides, observations with a four-inch telescope, and laboratory work with the sun spectrum and the spark spectrum sufficient to give an insight into modern methods of astronomical work. *Spring term of Senior year; 2 exercises per week. Elective; open to all Seniors.*

2. Practical Astronomy.—The use of instruments; the determination of time, of latitude, of longitude. *Spring term of Senior year; 2 exercises per week. Elective; open to Mechanical Seniors.*

MECHANICS.

1. Strength of Materials.—Strength of iron and steel; simple and continuous beams; pipes and columns. *Spring term, Junior year; recitations, 3 exercises per week, laboratory work 1 exercise of 2 hours per week. Required of Mechanical students.*

2. Mechanism.—Rectilinear motion. Rotary motion. Transmission of motion. *Spring term, Junior year; 2 exercises per week. Required of Mechanical students.*

3. Mechanics of Engineering.—Bodies in equilibrium and in motion; work and power; friction of rest and motion. Recitations. *Fall term of Senior year; 5 exercises per week.* Theory of arches, retaining walls, gas engines, hot-air engines. *Winter term of Senior year; 4 exercises per week.* Hydraulics and water-wheels. *Spring term of Senior year; 5 exercises per week. Required of Mechanical students.*

4. Steam Engineering.—Study of steam and its properties;

simple and compound engines; steam boilers. *Fall term, Senior year; 3 exercises per week. Elective.*

5. Metallurgy.—Study of the manufacture of cast iron, wrought iron, and steel; rolling-mill machinery; metallurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year; 3 exercises per week. Elective.*

6. Mechanical Drawing. *Sophomore year. Winter term;* [illegible] *exercise of 2 hours per week. Required of Agricultural students.*

7. Mechanical Drawing. *Sophomore year. Fall term; 2 exercises of 2 hours each per week. Winter term; 1 exercise of 2 hours per week. Spring term; 1 exercise of 3 hours per week. Required of Mechanical students.*

8. Mechanical Drawing. *Junior year. Fall term; 2 exercises of 2 hours each per week. Winter term; 1 exercise of 3 hours per week. Spring term; 2 exercises of 2 hours each per week. Required of Mechanical students.*

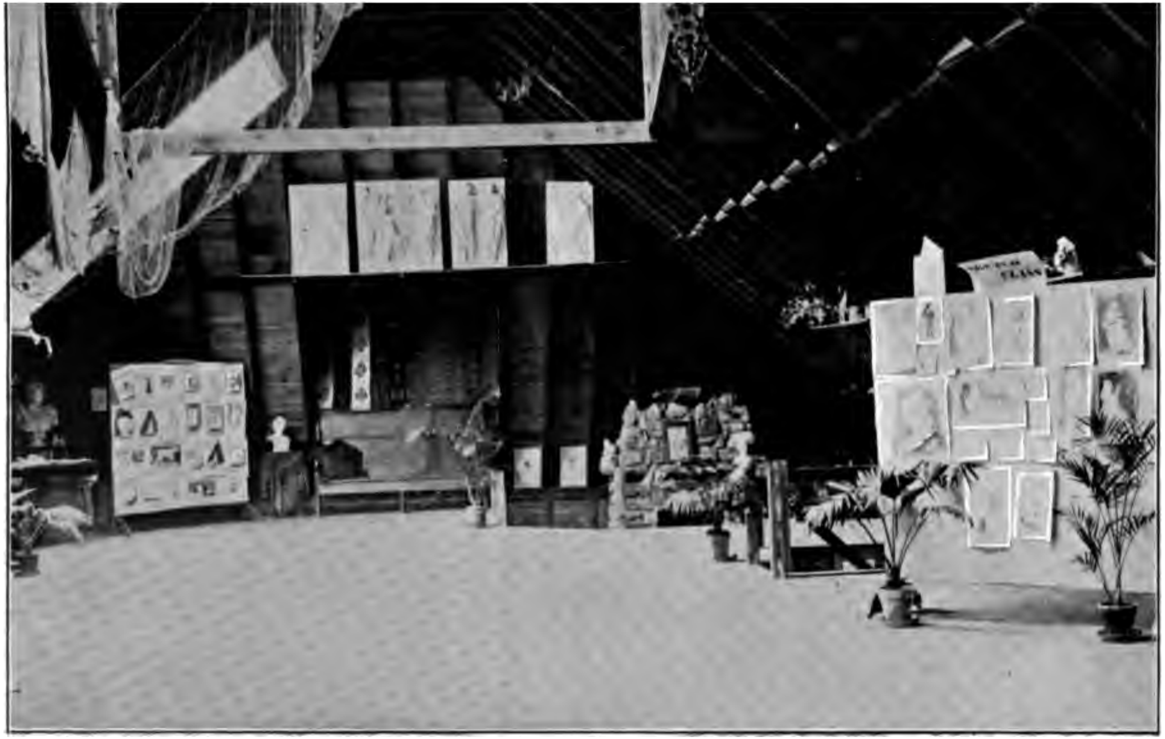
9. Mechanical Drawing.—Machine drawing and design. *Winter and Spring terms of Senior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

10. Wood-Working.—Use of tools, bench work and carpentering. *Fall term of Freshman year; shop-work, 2 exercises of 3 hours each per week.* Carpentering and practical construction in wood. *Winter term of Freshman year; shop-work, 2 exercises of 3 hours each per week. Required of all Freshmen.*

11. Wood-Turning. *Fall term of Sophomore year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

12. Wood-Turning. *Fall term of Sophomore year; shop-work, 1 exercise of 3 hours per week. Required of Agricultural students.*

13. Wood-Carving.—Care and use of tools, geometrical motives, diaper patterns, incised carving, flat and curved surface carving, historic ornament, low relief and high relief. *Elective throughout the course; 1 exercise of 3 hours per week.*



THE STUDIO.

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14. **Iron Work.—Forging, drawing, bending, welding and tool dressing.** *Winter term of Sophomore year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

15. Construction, and Estimates of Cost. *Winter term of Sophomore year; shop-work and lectures, 2 exercises of 2 hours each per week. Required of Agricultural students.*

16. Forging. *Spring term of Sophomore year; shop-work, 1 exercise of 3 hours per week. Required of Mechanical students.*

17. Forging. *Winter term of Junior year; 1 exercise of 3 hours per week. Required of Agricultural students. Spring term of Junior year; 1 exercise of 3 hours per week. Elective for Agricultural students.*

18. Pattern-Making. Principles of moulding and casting. *Fall term of Junior year; shop-work, 2 exercises of 3 hours per week. Required of Mechanical students.*

19. Machine-Shop Practice. *Winter and Spring terms of Junior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

20. Machine Construction. *Throughout the Senior year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

21. Analytical Mechanics.—(Same as Mathematics 15). *Junior year, Spring term. Open to students who have completed one term of Mathematics 11.*

22. Engineering Conferences.—Subjects chosen by the class. *Spring term of Senior year; 2 exercises per week. Required of Mechanical students.*

DRAWING AND MODELING.

1. Freehand Drawing.—Drawing in charcoal from objects and still life. Special attention given to values. Memory sketches required. *Spring term of Freshman year; 2 exercises of 2 hours each. Required of all Freshmen.*

2. Drawing from the cast in charcoal.—Memory sketches required. *Fall term of Sophomore year; 1 exercise of 2 hours per week. Required of all Sophomores.*

3. Drawing from life or the cast. Painting in oil, pastel or water color. *Elective; open to students who have taken courses 1 and 2.*

4. Modeling in clay from simple objects and casts. *Fall term of Sophomore year; 1 exercise of 2 hours per week. Required of Agricultural students.*

MILITARY DRILL AND TACTICS.

1. Infantry Drill.—School of the soldier. School of the company. School of the battalion and small-arm target practice. *Throughout the course, 3 exercises per week.*

2. Artillery Drill.—School of the soldier dismounted. Sabre exercise and target practice. School of the battery dismounted for selected detachments. Students in course 2 are selected by the commandant from those reasonably proficient in course 1.

3. Military Science. *Lectures given in Winter term.*

4. Signal Drill.—With heliograph flags, torches, and telegraphic instruments, according to the United States Signal code.

CORNER OF STUDIO.

COURSE OF STUDY

OF THE

R. I. College of Agriculture and Mechanic Arts.

FRESHMAN YEAR.

FALL TERM.

	Exercises per week.		Exercises per week.
Physical Geography, I*	3	Mathematics, I	5
Agriculture, I	2	Mechanics, X	2
English, I.	5	Military Drill and Tactics, I	3
History, I	2		

Electives—Latin, I. Mechanics, XIII.

WINTER TERM.

Physiology, I	3	Mathematics, I	5
English, II	5	Mathematics, II	3
History, II	2	Mechanics, X	2
		Military Drill and Tactics, I	3

Electives—Latin, I. Mechanics, XIII.

SPRING TERM.

Physiology, I	2	Mathematics, I	3
Agriculture, III	2	Mathematics, III	4
English, II	4	Drawing, I	2
History, II	2	Military Drill and Tactics, I	3

Electives—Latin, I. Mechanics, XIII.

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* The Roman numerals refer to the number of the course. See pp. 40-56.

SOPHOMORE YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	**Mechanical Course.**	Exercises per week.
Physics, I	4	Physics, I	4
Agriculture, IV	2	English, II	2
Agriculture, V	3	French, I	3
English, II	2	Mathematics, III	5
French, I	3	Mechanics, VII	2
Mathematics, III	5	Mechanics, XI	2
Mechanics, XII	1	Drawing, II	1
Drawing, II	1	Military Drill and Tactics, I	3
Modeling, IV	1		
Military Drill and Tactics, I	3		

* **Electives**—Latin, II. Mathematics, XVI. Mechanics, XIII.

WINTER TERM.

Physics, I	4	Physics, I	4
Botany, I	4	Botany, I	4
English, II	2	English, II	2
French, I	3	French, I	3
Mathematics, IV	3	Mathematics, IV	3
Mechanics, VI	1	Mechanics, VII	1
Mechanics, XV	2	Mechanics, XIV	2
Military Drill and Tactics, I	3	Military Drill and Tactics, I	3

Electives—Latin, II. Mechanics, XIII.

SPRING TERM.

Chemistry, I	4	Chemistry, I	4
Physics, I	4	Physics, I	4
Botany, I	4	Botany, I	4
French, I	3	French, I	3
Mathematics, V	3	Mathematics, VIII	3
Military Drill and Tactics, I	3	Mechanics, VII	1
		Mechanics, XVI	1
		Military Drill and Tactics, I	3

Electives—Latin, II. Mathematics, XII. Mechanics, XIII. Drawing, III.

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* A student may elect work offered to a lower class or to the other division of his own class.

JUNIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Chemistry, II	3	Chemistry, II	3
Chemistry, III	2	Chemistry, III	2
German, I	3	German, I	3
Mathematics, VI	4	Mathematics, IX	4
Botany, II	3	Mathematics, X	3
Horticulture, I	4	Mechanics, VIII	2
Military Drill and Tactics, I	3	Mechanics, XVIII	2
		Military Drill and Tactics, I	3

Electives—Physics, II. French, II. Latin, III. Mechanics, XIII. Drawing, III.

WINTER TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Chemistry, III	2	Chemistry, III	2
Chemistry, IV	4	English, III	4
English, III	4	German, I	3
German, I	3	Mathematics, IX	4
Agriculture, VI	5	Mathematics, XI	3
Mechanics, XVII	1	Mechanics, VIII	1
Military Drill and Tactics, I	3	Mechanics, XIX	1
		Military Drill and Tactics, I	3

Electives—Physics, II. Botany, III, IV. Horticulture, II. French, II. Latin, III. Mechanics, XIII. Military Drill and Tactics, III.

SPRING TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
English, III	4	English, III	4
German, I	3	German, I	3
Chemistry, V	3	Mathematics, XI	3
Chemistry, VI	2	Mechanics, VIII	2
Zoölogy, I	4	Mechanics, II	2
Agriculture, VI	2	Mechanics, I	4
Military Drill and Tactics, I	3	Mechanics, XIX	1
		Military Drill and Tactics, I	3

Electives—Physics, II. Botany, III, IV. Horticulture, III. French, II. Latin, III. Mathematics, XV. Mechanics, XIII, XVII. Drawing, III.

*SENIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Ex pe
Chemistry, V	2	Mathematics, X	
Physiology, II	4	Mechanics, III	
Agriculture, VII	3	Mechanics, XX	
Military Drill and Tactics, I	3	Military Drill and Tactics, I	

Electives—Chemistry, VII. Physics, II. Botany, III, IV. Horticultu English, IV, V. German, II, V. Latin, IV. French, III, IV, V. P Science, I. Mathematics, VII, XIII. Mechanics, IV, XIII. Drawing, I

WINTER TERM.

Physiology, II	3	Mechanics, III	
Geology, I	2	Mechanics, IX	
Agriculture, VIII	2	Mechanics, XX	
Horticulture, V	3	Military Drill and Tactics, I	
Military Drill and Tactics, I	3		

Electives—Chemistry, VII. Physics, II. Botany, III, IV. Agricult Horticulture, VI. English, IV, V. German, III, IV, V. Latin, IV. F III, IV, V. Political Science, II. Mathematics, XIV. Mechanics, V, Military Drill and Tactics, III.

SPRING TERM.

Veterinary Science, I	4	Mechanics, III	
Agriculture, IX	1	Mechanics, IX	
Horticulture, VII	2	Mechanics, XX	
Military Drill and Tactics, I	3	Mechanics, XXII	
		Military Drill and Tactics, I	

Electives—Chemistry, VII. Physics, II, III. Botany, III, IV. Agric XI. Psychology, I. English, IV. German, III, IV, V. Latin, IV. I III, IV, V. History, IV. Mathematics, VII, XIV. Astronomy, I, I chanics, XIII. Drawing, III.

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* The equivalent of 15 hours of recitation per week is required.

AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the State who cannot attend the College as students, the faculty has arranged a course of study known as the Agricultural College Extension. The plan of operation is similar to that of the Chautauqua Reading-Circle. On December 20th, 1894, circulars giving the course of study, suggestions for supplementary reading, and other information relating to the course, were sent to those persons within the State whose names were on our mailing list. The following is reprinted from our Extension circular:

COURSE OF STUDY.

The course of study is so arranged as to meet the requirements of all, with no limitations as to age, sex, or occupation. Persons may take short special courses in any branch, and receive certificates for proficiency therein, or they may take a more extended course, and receive the award of a special diploma. An examination either at the college or under the direction of some authorized person will be necessary for obtaining either certificate or diploma, but this arrangement does not prevent persons from taking any course without such examination. Persons desiring to graduate will be required to pass an examination on at least one book under each number in the following three years' course; thus taking five studies each year. Additional work may be taken by any desiring it. Persons will be passed, upon writing a satisfactory review, of one thousand or more words, of the books marked by a star. On all other books, a written examination will be required.

FIRST YEAR.

		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	First Principles of Agriculture. *Mills and Shaw*	$	$ 40	$ 05
	American Literature. *Hawthorne and Lemmon*		1 12	10
2.	*Home Floriculture. *Rexford*	1 50	1 20	08
	Silos, Ensilage, and Silage. *Miles*	50	38	04
	*Helps for Home Makers. *Mary Blake*	75	56	08
3.	Insects and Insecticides. *Weed*	1 25	1 00	08
	The Human Body. *Martin*		1 20	10
4.	Feeding Animals. *Stewart*	2 00	1 60	12
	American History. *Montgomery*		1 00	11
5.	Manual of the Constitution. *Andrews*		1 00	08

SECOND YEAR.

1.	Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$ 06
	Representative English Literature. *Pancoast*		1 60	12
2.	Text-Book of Botany			
	Horses, Cattle, Sheep and Swine. *Curtis*	2 00	1 60	12
	*Ornamental Gardening for Americans. *Long*	2 00	1 50	08
3.	How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
	How to Make the Garden Pay: *Greiner*	2 00	1 60	12
	Profitable Poultry Keeping. *Beale*	1 50	1 12	08
	*Anna Maria's Housekeeping. *Power*	75	56	08
4.	Stock Breeding. *Miles*	1 50	1 12	12
	English History. *Montgomery*		1 12	11
5.	Political Economy (Briefer Course). *Walker*		1 00	08
	Astronomy. *Newcomb*		1 30	12

THIRD YEAR.

1	Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$ 06
	General History. *Meyers*		1 50	15
2.	A Text-Book of Chemistry			
	The Nursery Book. *Bailey*	1 00	80	06
	Draining for Profit and Health. *Waring*	1 50	1 12	08
3.	Langstroth on the Hive and Honey Bee. (Danant's Revision)		1 12	08
	American Fruit Culturist. *Thomas*			
	American Dairying. *Gurler*	1 00	80	06

	Publisher's Price.	Price to Members of the Extension.	Postage.
House Construction. *Taft*	$1 50	$1 20	$ 08
Breeding. *Sanders*	2 00	1 50	12
Farming. *Terry*	2 00	1 60	13

h translation of a foreign literature.
s will be recommended later acccording to the
bject chosen.)

New Womanhood. *Fernald*	1 25	94	08
ced Course in Political Economy. *Walker*		2 00	15
nd Rocks. *Stockbridge*	2 50	2 25	12

gement affords opportunity for taking special courses in either agri-
rticulture, while it also contains studies that will admit of a course
out the agricultural books, which some might not care to study

h a great deal of reluctance that physiology, botany, and chemistry
in the course; and while a knowledge of these sciences is considered
e, no person will be encouraged to begin them unless he arranges
e to the College one term for laboratory practice and aid, or to join
taught by an instructor from the College. This latter arrangement
ted, if communities, granges, etc., take up the work with that end

SUPPLEMENTARY READING.

g the books for this course of study, the committee has had under
a large number of valuable ones; and in many cases, selection was
therefore feels that in presenting the limited number of studies for
everal books have been left out which should have a place, if not in
eading-course, in the home, grange, or town library. A list of sup-
works is therefore appended.

	Publisher's Price.	Price to Members.	Postage.
(2 vols.) *Storer*	$5 00	$3 75	$ 24
nures. *Harris*	1 75	1 31	08
iry Husbandry. *Willard*	3 00	2 00	16
of North America. *Beal*	2 50	2 00	10

	Publisher's Price.	Price to Members.
The Farmer's Veterinary Adviser. *Law*	$3 00	$2 40
Plant Life on the Farm. *Masters*	1 00	75
The Shepherd's Manual. *Stewart*	1 50	1 12
Harris on the Pig. *Harris*	1 50	1 12
Practical Poultry Keeping. *Wright*	2 00	1 50
The Book of Poultry. *Wright.*	5 00	3 75
Colored Plates.	12 50	9 38
How Crops Feed. *Johnson*	1 50	1 12
How Crops Grow. *Johnson*	1 50	1 12
A B C of Bee Culture. *Root*	1 25	1 00
A Modern Bee Farm. *Simmins*		
Bees and Bee-Keeping. (2 vols.) *Cheshire*		
The Production of Comb Honey. *Hutchinson*		25
The Production of Extracted Honey. *Cowan*		
The Incubator and its use. *Rankin*		
Poultry for Profit. *Jacobs*		
Incubators and Brooders. *Jacobs*		
Natural and Artificial Duck Raising. *Rankin*		
Poultry. (A Treatise on raising Broilers and Ducks by Artificial Means) *McFetridge*		
Hand-book of Plants. *Henderson*	$4 00	3 20
Flowers, Fruits and Leaves. *Sir John Lubbock*		
How to Know the Wild Flowers. *Dana*		1 50
Origin of Species. *Darwin*	2 00	1 50
Animals and Plants under Domestication. (2 vols.) *Darwin*	5 00	3 75
The American Commonwealth. *Bryce*		3 50
Letters to a Daughter. *Starrett*	75	60
How the Other Half Lives. *Riis*		1 25
Amenities of Home	60	45
How to Win. *Frances E. Willard*	1 00	75
New-England Legends and Folk Lore. *Drake*	2 00	1 50
A Nameless Nobleman. *Jane Austin*	1 25	94
Dr. LeBaron and his Daughter. *Jane Austin*	1 25	94
Standish of Standish. *Jane Austin*	1 25	94
Betty Alden. *Jane Austin*	1 25	94
Half Hours with American History. (2 vols.) *Morris*	3 00	2 25
Masterpieces of American Literature		1 00

	Publisher's Price.	Price to Members.	Postage.
Riverside Literature Series		15	Free
A Short History of the English People. *Green*		1 20	15
Student's History of England. *Gardiner*		3 00	15
Readings from English History. *J. R. Green*	1 50	1 12	12
English Classic Series		12	Free
Public Opinion (Periodical)			

MEMBERSHIP.

No examination is required for membership in the College Extension courses. Any person desiring to become a student in this department should make application by sending to the secretary his name, address and occupation, together with a statement as to the course of study he wishes to pursue, and the extent of his previous study and practical experience in the line chosen. Upon receipt of this application, the student will be enrolled as a member of the College Extension, and his name will be forwarded to the Rhode Island News Company, 113 and 115 Westminster street, Providence, from which firm he can then obtain any books in the above list at special rates.

CLASS STUDY.

While students are earnestly encouraged to work independently, decided advantages will be found to arise from the formation of reading circles in neighborhoods and granges, where weekly meetings for consultation and discussion may be held. If several (not less than six) in the same locality are taking a given course, arrangements may be made for an instructor from the college to be present at the meetings of the class when special instruction is desired. A course may be begun at any time during the year.

GRADUATION.

Upon the completion of a year's work, arrangements for examination may be made by correspondence with the secretary, and upon the completion of three years' work, examinations upon the same having been successfully passed, the student will graduate, and receive a diploma from the college. Students graduating from this department will be expected to be present at the college on Commencement Day, to receive their diplomas.

EXPENSES.

The expense to readers in this course is for books only, any of which are worthy of a place in the farm home library, and are offered here at very reasonable prices. In case an instructor is called to give lessons away from the college, the members interested will be required to pay his traveling expenses.

CORRESPONDENCE.

If further information is desired upon any point, if difficulties of any nature are encountered by the student in his study, or if any advice is required in the selection of books, a letter to the secretary will insure a reply upon the point in question. All interested in this work, whether enrolled as students or not, are invited to visit the college frequently—its library, laboratories and the Experiment Station—and to encourage others to do the same. It is the object and wish of the management of the college to do all in its power to promote the best interests of the people of the State, and the co-operation of every loyal citizen is sought. All correspondence relating to the Agricultural College Extension should be addressed to

J. D. TOWAR, *Secretary*,
Kingston, Rhode Island.

MILITARY ORGANIZATION.

COMMANDANT.

W. W. Wotherspoon, Captain Twelfth Infantry, U. S. A.

Benjamin Barton, Captain of Company.

E. F. Tabor	First Lieutenant.
C. A. Brayton	Second Lieutenant.
W. B. Madison	First Sergeant.
J. E. Williams	Sergeant.
H. E. B. Case	Sergeant.
W. C. P. Merrill	Sergeant.
N. L. C. Moore	Sergeant.
A. F. Grinnell	Corporal.
A. A. Tucker	Corporal.
A. L. Kenyon	Corporal.
L. H. Marsland	Corporal.
H. W. Case	Bugler.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

C. A. Brayton, President.

H. E. B. Case, Vice President.

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W. P. Alexander, Treasurer.

ALUMNI ASSOCIATION.

George M. Tucker, President.

George A. Rodman, Secretary, Woonsocket, R. I.	Charles L. Sargeant, Treasurer, Peacedale, R. I.

GENERAL VIEW.

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STUDENTS.

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n, Warren Brown	East Greenwich,	“
n, George Albert	Kingston,	“
, George Mason	Swansea Centre,	Mass.
, Byron Edgar	Summit,	R. I.

GRADUATES OF 1895.

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, Howland, Agr	Newport,	“
Charles Sherman, Mech	Jamestown,	“
Mabel DeWitt	Kingston,	“
nd, John Edward, Agr	Jamestown,	“
Lincoln Nathan, Mech	Peace Dale,	“
rthur Curtis, Mech	Summit,	“
esse Cottrell, Mech	Jamestown,	“
, Byron Edgar, Mech	Summit,	“

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, Charles Andrew, Agr	Fiskeville,	“
May	Narragansett Pier,	“

Greenman, Adelaide Maria	Kingston,	R. I.
Kenyon, Albert Lewis, Mech	Point Judith,	"
Moore, Nathan Lewis Cass, Agr	Shannock,	"
Tabor, Edgar Francis, Mech	Slatersville,	"
Williams, James Emerson, Agr	Summit,	"

JUNIORS.

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Kenyon, Charles Franklin, Mech	Shannock,	"
Kenyon, Albert Prentice, Mech	Ashaway,	"
Marsland, Louis Herbert, Mech	Franklin,	N. Y.
Peckham, Charles Herbert, Mech	Coventry,	R. I.
Tefft, Eliza Alice	Allenton,	"
Thomas, Irving, Mech	Lafayette,	"
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SOPHOMORES.

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Case, John P., Agr	Gould,	"
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Congdon, Henry Augustus, Mech	Mooresfield,	"
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Harley, William Ferguson, Agr	Pawtucket,	"
Larkin, Jessie Louise	Watch Hill,	"
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ohn Purkis., Agr	Chepachet,	R. I.
obert Bruce, Agr	Wakefield,	"
William James, Agr	Slatersville,	"
Attmore Arnold, Agr	Wakefield,	"
, Charles Noyes	Shannock,	"
Henry Paige, Mech	Allenton,	"
Grace Ellen	Allenton,	"
, Cornelia	Allenton,	"

FRESHMEN.

athaniel Bertram	East Greenwich,	R. I.
Everett Mullen	Wood River Junction,	"
Ralph Day	Providence,	"
Arthur Sisson	Hope Valley,	"
ler, Nelson A.	Crompton,	"
an, Henry Mason	White Rock,	"
James Edward	Abbott Run,	"
g, John Stuart	Pawtucket,	"
rank Roffee	Providence,	"
y, Robert Stanley	Providence,	"
erman James	Adamsville,	"
Mildred Wayne	Allenton,	"
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s, Carroll	Kingston,	"
s, Harry	Point Judith,	"
errill Augustus	Bay Shore, Long Island,	N. Y.
eorge Eldred	Westerly,	R. I.
eorge E.	Hope Vallley,	"
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Ebenezer	Lyons Farms,	N. J.
, Walter Clark	Lafayette,	R. I.
Nellie Hollis	Littleton,	Mass.
ls, Robert Spink	Wickford,	R. I.
n, George Albert	West Kingston,	"

SPECIALS.

Ballou, Latimer A.	Lawrence,	Mass.
Boynton, Myra Louisa	“	“
Case, Harold Warren	Pawtucket,	R. I.
Clarke, John G.	West Kingston,	“
Clarke, William Hazard	West Kingston,	“
Fiske, Nina Viola	Olneyville,	“
Gardner, George Wallace	Block Island,	“
Gates, Eugene Herbert	Shannock,	“
Gross, Herbert Dow	North Foster,	“
Hanson, Gertrude Maie King	Peace Dale,	“
Kingsley, Walter Burnside	Hamilton,	“
Magill, Arthur Reginald	Newport,	“
Merrill, William Chauncey Palmer	Central Falls,	“
Nelson, George Oscar	Peace Dale,	“
Newton, Willis Bertram	Washington,	“
Oatley, George Nathan	Peace Dale,	“
Peckham, Herbert James	Middletown,	“
Pike, David	Riverpoint,	“
Reynolds, Rebecca D.	East Greenwich,	“
Sherman, Abbie Gertrude	Kingston,	“
Steere, Enoch Mowry	Chepachet,	“
Van Horne, Mahlon Augustus	Newport,	“
Wells, Grace Perry	Kingston,	“
Wright, Silas Wilber	Wakefield,	“
Wright, Mary Ella	Shannock,	“
Woodmansee, Mattie Florence	Shannock,	“

SPECIALS IN WOOD-CARVING.

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Carmichael, Mrs. George	Shannock,	R. I.
Clemens, Julia	Wakefield,	"
Green, Aldana	Kenyon,	"
Green, Nellie	Kenyon,	"
Greenman, Mrs. A. A	Kingston,	"
Hudson, Lila	Wakefield,	"
King, Lizzie	Kenyon,	"
Metcalf, Alice	Carolina,	"
Northrup, Florence	Rocky Brook,	"

Post Graduates	9
Graduates, 1895	9
Seniors	8
Juniors	11
Sophomores	22
Freshmen	24
Specials	26
Specials in Wood-Carving	14
Total, counting none twice	121

TREASURER'S REPORT.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLL
AGRICULTURE AND MECHANIC ARTS.

1895.		DR.	
Jan.	1.	To cash balance on hand	$8
Dec.	31.	Interest from 1862 fund	1,
		J. H. Washburn, President, for students' board, etc.	8
		Incidental credits, cash	
		Cash received from interest	
			$18

1895.	CR.	
	By Salaries	$1,
	Postage, stationery, and printing	
	Freight and expressage	
	Traveling	
	Labor	1,
	Store	1,
	Furniture	2,
	Incidentals	2,
	Construction and repairs	6,
	Provisions	1,
	Boarding expense	
	Cash on hand	
		$18,

This is to Certify that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of four dollars and twenty-seven cents ($4.27).

GARDNER C. SIMS,
HENRY L. GREENE,
CHAS. J. GREENE,
Auditing Committee.

THE RHODE ISLAND STATE AGRICULTURAL EXPERIMENT STATION *in account with the* UNITED STATES' APPROPRIATION.

1895.	Dr.		
	To receipts from the Treasurer of the United States as per appropriation for the year ending June 30, 1895, under act of Congress approved March 2, 1887		$15,000 00
1895.	Cr.		
June 30.	By Salaries	$8,591 50	
	Labor	2,194 45	
	Publications	850 26	
	Postage and stationery	123 25	
	Freight and expressage	167 82	
	Heat, light and water	93 13	
	Chemical supplies	200 16	
	Seeds, plants and sundry supplies	311 56	
	Fertilizers	525 33	
	Feeding stuffs	447 65	
	Library	157 83	
	Tools, implements, and machinery	303 84	
	Furniture and fixtures	65 26	
	Scientific apparatus	61 76	
	Live stock	216 25	
	Traveling expenses	217 53	
	Contingent expenses	13 25	
	Building and repairs	459 17	
			$15,000 00

We, the undersigned, duly appointed Auditors of the Corporation, do hereby certify that we have examined the books and accounts of the Rhode Island

Agricultural Experiment Station for the fiscal year ending June 30, 1895; that we have found the same well kept and classified as above, and that the receipts for the year from the Treasurer of the United States are shown to have been fifteen thousand dollars, (see general station account in the Treasurer's hands), and the corresponding disbursements fifteen thousand dollars; for all of which proper vouchers are on file and have been by us examined and found correct.

And we further certify that the expenditures have been solely for the purposes set forth in the Act of Congress approved March 2d, 1887.

GARDINER C. SIMS,
CHAS. J. GREENE.
Auditors.

Kingston, Aug. 20, 1895.

I hereby certify that the above is a true copy from the books of the account of the institution named.

MELVILLE BULL,
Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

I hereby certify that the above signature is that of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

1895.	DR.	
June 30.	To balance from last year	$35 28
	Station receipts	1,346 42
	Station receipts Fertilizer inspection	2,026 57
	Interest	46 59
		$3,454 86
	CR.	
	By Salaries	$456 62
	Labor	345 16
	Supplies and repairs	1,016 16
	Freight and expressage, postage and stationery	27 72
	Library and printing	133 25
	Scientific instruments	35 70

By Chemical apparatus and supplies	114 49
Live stock	5 00
Traveling	16 91
Building	128 44
Fertilizer inspection	126 88
Incidentals	26 90
Balance on hand	1,021 63
	$3,454 86

MELVILLE BULL, *Treasurer, in account with* UNITED STATES' SPECIAL APPROPRIATION.

1895.	DR.	
June 30.	To balance on hand	$1,581 97
	Interest	27 00
		$1,608 97
	CR.	
	By Library	$184 28
	Chemical apparatus	114 49
	Scientific apparatus	35 70
	Balance unexpended	1,274 50
		1,608 97

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, ending June 30, 1895, and the vouchers corresponding therewith, and find the same correct.

Synopsis of the Report of the Treasurer of the Rhode Island College of A
and Mechanic Arts to the Secretary of Agriculture and the Secretary
Interior, of amount received under Act of Congress of August 3
1890, in aid of Colleges of Agriculture and the Mechanic
Arts, and of the disbursements thereof, to and
including June 30, 1895.

Balance on hand July 1, 1894	$61,899 43
Installment for 1894-95, received July 26, 1894	20,000 00
Total available for year ending June 30, 1895	$

DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction	$5,449 93
SCHEDULE B.—Disbursements for Instruction in Mechanic Arts and for facilities for such instruction	13,600 52
SCHEDULE C.—Disbursements for Instruction in English Language and for facilities for such instruction	4,280 49
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction	1,993 52
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction	15,755 45
SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction	149 10
Total expended during year	$41,229 01
Balance remaining unexpended	40,670 42

I HEREBY CERTIFY that the above account is correct and true,
gether with the schedules hereunto attached, truly represents the det

OF THE RHODE ISLAND COLLEGE OF AGRICUL-
AND MECHANIC ARTS.

ent of Physiology	$4,297	97
partment	1,211	55
al Department	1,304	57
ges and History	4,078	87
	234	25
ltural Department	2,976	89
Vorking and Iron-Working Depart-		
	10,063	77
atical Department	1,398	74
atus in the Photo. Department	1,263	75
al Department	3,593	04
ltural Department	2,380	16
artment of Physics	2,500	00
rtment	2,035	00
itory	1,000	00
y equipment	*4,500	00
oolrooms	1,016	00
achinery of the Experiment Station	4,485	00
n	2,300	00
ent Station	4,977	00
erty	$55,616	56
	$2,500	00

Dormitory	45,000
Water Supply	10,000
Experiment Station Laboratory	20,000
Barns	5,000
Farm, roads, and improvements	15,000
Amount of real estate	$122,100
Total amount of real estate and personal property	$177,716

Synopsis of the Report of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts to the Secretary of Agriculture and the Secretary of the Interior, of amount received under Act of Congress of August 30, 1890, in aid of Colleges of Agriculture and the Mechanic Arts, and of the disbursements thereof, to and including June 30, 1895.

Balance on hand July 1, 1894	$61,899 43	
Installment for 1894-95, received July 26, 1894	20,000 00	
Total available for year ending June 30, 1895		$81,899 43

DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE 30, 1895

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction	$5,449 93	
SCHEDULE B.—Disbursements for Instruction in Mechanic Arts and for facilities for such instruction	13,600 52	
SCHEDULE C.—Disbursements for Instruction in English Language and for facilities for such instruction	4,280 49	
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction	1,993 52	
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction	15,755 45	
SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction	149 10	
Total expended during year	$41,229 01	
Balance remaining unexpended	40,670 42	
		$81,899 43

I HEREBY CERTIFY that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named; and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction.

MELVILLE BULL, *Treasurer.*

INVENTORY OF THE PROPERTY OF THE RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Books and apparatus in Department of Physiology	$4,297 97
Books and apparatus in Art Department	1,211 55
Books and apparatus in Botanical Department	1,304 57
Books in Department of Languages and History	4,078 87
Geological specimens	234 25
Books and apparatus in Horticultural Department	2,976 89
Tools and machinery in Wood-Working and Iron-Working Departments	10,063 77
Books and apparatus in Mathematical Department	1,398 74
Books, lantern slides, and apparatus in the Photo. Department	1,263 75
Books and apparatus in Chemical Department	3,593 04
Books and apparatus in Agricultural Department	2,380 16
Books and apparatus in the Department of Physics	2,500 00
Property of the Boarding Department	2,035 00
Furniture of the Women's Dormitory	1,000 00
Guns, cannon, and other military equipment	*4,500 00
Furniture in the offices and schoolrooms	1,016 00
Scientific apparatus, tools, and machinery of the Experiment Station	4,485 00
Books of the Experiment Station	2,300 00
Other property of the Experiment Station	4,977 00
Amount of personal property	$55,616 56

Women's Dormitory	$2,500 00
Hothouse	200 00
Mechanical Building	10,000 00
Blacksmith Shop	400 00
Temporary wooden buildings	4,000 00
Boarding Hall	10,000 00

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* Loaned by the War Department.

Dormitory	45,000 00
Water Supply	10,000 00
Experiment Station Laboratory	20,000 00
Barns	5,000 00
Farm, roads, and improvements	15,000 00
Amount of real estate	$122,100 00
Total amount of real estate and personal property	$177,716 56

e of Agriculture
and
echanic Arts.

Kingston, R. I.

1897.

NINTH ANNUAL REPORT

OF THE

Corporation, Board of Managers,

OF THE

R. I. COLLEGE OF AGRICULTURE

AND

MECHANIC ARTS,

MADE TO THE

General Assembly, at its January Session, 1897.

1876 PART I.

Part II, Experiment Station Report, is printed under separate cover.

PROVIDENCE, R. I.
E. L. FREEMAN & SONS, PRINTERS TO THE STATE.
1897.

Rhode Island College of Agriculture and Mechanic Arts.

CORPORATION.

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Hon. C. H. COGGESHALL................. ....Bristol County.
Hon. CHARLES J. GREENE.........................Washington County.
Hon. HENRY L. GREENE....... ....Kent County.
Hon. GARDINER C. SIMS..........................Providence County.

OFFICERS OF THE CORPORATION.

Hon. C. H. COGGESHALL, President...... ...... P. O., Bristol, R. I.
Hon. HENRY L. GREENE, Vice President.........P. O., Riverpoint, R. I.
Hon. CHARLES J. GREENE, Clerk...............P. O., Kenyon, R. I.
Hon. MELVILLE BULL, Treasurer .... P. O., Newport, R. I.

REPORT.

To His Excellency Charles Warren Lippitt, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1897:

I have the honor to submit herewith the Ninth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

CHANDLER H. COGGESHALL,

President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

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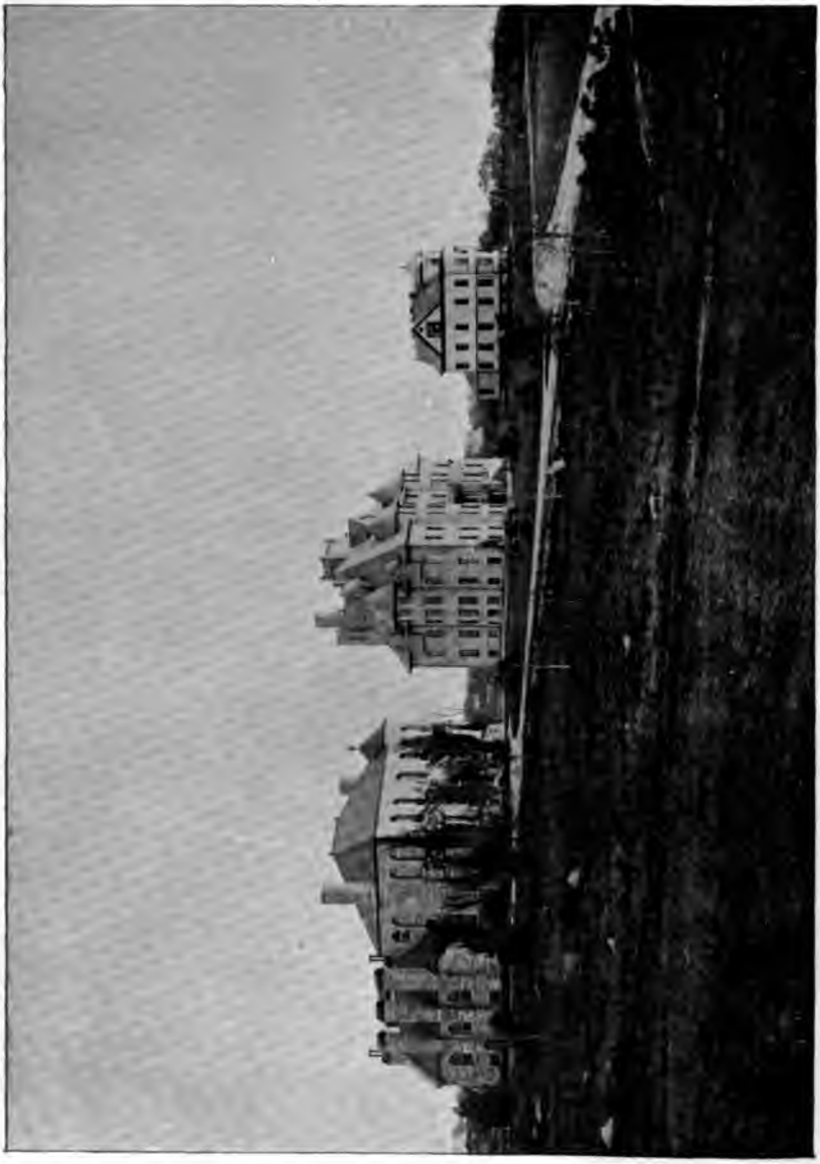


FACULTY.

JOHN HOSEA WASHBURN, Ph. D.,

PRESIDENT.

Professor of Agricultural Chemistry.

B. S., Massachusetts Agricultural College, 1878; Graduate student, Brown University, 1880; Graduate student, Massachusetts Agricultural College, 1881-1883; Professor of Chemistry, Storrs Agricultural School, 1883-1887; Student in Göttingen University, 1885 and 1887-1889; Ph. D., Göttingen, 1889; Appointed President, 1890.

CHARLES OTIS FLAGG, B. S.,

Emeritus Professor of Agriculture.

B. S., Massachusetts Agricultural College, 1872; President of Board of Managers of R. I. College of Agriculture and Mechanic Arts, 1888-1894; Professor of Agriculture, 1890-1896; Director of R. I. Experiment Station since 1889.

HOMER JAY WHEELER, Ph. D.,

Professor of Geology.

B. S., Massachusetts Agricultural College, 1883; Assistant Chemist, Massachusetts State Experiment Station, 1883-1887; Graduate student, University of Göttingen, 1887-1889; Ph. D. Göttingen, 1889; Appointed Chemist of R. I. Agricultural Experiment Station and Professor of Geology, 1890.

ANNE LUCY BOSWORTH, B. S.,

Professor of Mathematics.

B. S., Wellesley College, 1890; First Assistant, Amesbury (Mass.) High School, 1890-1892; Appointed Professor of Mathematics, April, 1892; Graduate student at the University of Chicago, summer of 1894 and 1896.

E. JOSEPHINE WATSON, A. M.,

Professor of Languages.

A. B., Smith College, 1882; A. M., The Cornell University, 1883; Assistant in English, Smith College, 1883-1887; Student of North European Languages in Göttingen, 1887-1889; Appointed Professor of Languages, September, 1892; Student of French in Tours, summer of 1895.

WILLIAM ELISHA DRAKE, B. S.,

Professor of Mechanical Engineering,

B. S., Polytechnic Institute, Worcester, 1886; Instructor in Physics and Electricity, Worcester Polytechnic Institute, 1887; Instructor in Woodworking at Pratt Institute, Brooklyn, 1887-1893; Appointed Professor of Mechanical Engineering, 1893.

OLIVER CHASE WIGGIN, M. D.,

Professor of Comparative Anatomy and Physiology,

M. D., Harvard University, 1866; Practicing physician in Providence, 1866-1886; Visiting physician to R. I. Hospital, 1872-1882; Consulting physician to Dexter Asylum, 1875-1885; President Providence Medical Association, 1880-1882; President Rhode Island Medical Society, 1884-1886; Founder of the Providence Lying-in Hospital, and President 1884-1891; Appointed Professor of Comparative Anatomy and Physiology, 1893.

WILLIAM WALLACE WOTHERSPOON,

Captain, 12th Infantry, U. S. A.,

Professor of Military Science and Tactics,

Appointed 2nd Lieutenant, 12th Infantry, October 1, 1873; Promoted 1st Lieutenant, March 20, 1879; Promoted Captain 12th Infantry, April 28, 1893; Appointed Professor of Military Science and Tactics, November, 1894.

HARRIET LATHROP MERROW, A. M.,

Professor of Botany,

B. S., Wellesley College, 1886; Teacher of Science, Plymouth (Mass.) High School, 1887-1888; Teacher of Science, Harcourt Place, Gambier, O., 1888-1891; Graduate student, University of Michigan, 1891-1892; A. M., Wellesley College, 1893; Graduate assistant, Botanical Laboratory, University of Michigan, 1893-1894; Appointed Professor of Botany, January, 1895.

ARTHUR AMBER BRIGHAM, PH. D.,

Professor of Agriculture.

B. S., Massachusetts Agricultural College, 1878; Engaged in practical farming, 1878-1888; Professor of Agriculture in the Imperial Agricultural College at Sapporo, Japan, 1888-1893; Graduate student at Göttingen University, 1893-1896; Ph. D., Göttingen, 1896; Appointed Professor of Agriculture, 1896.

GEORGE WILTON FIELD, PH. D.,

Professor of Zoology.

A. B., Brown University, 1887, and A. M. 1890; Ph. D., Johns Hopkins University, 1892; Assistant in Biology, Johns Hopkins University, 1891-1892; Occupant of Smithsonian Table at Naples Zoölogical Station, 1892-1893; Student at University of Munich, 1893; Associate Professor of Cellular Biology, Brown University, 1893-1896; Appointed Professor of Zoölogy, 1896.

JAMES DE LOSS TOWAR, B. S.,

Assistant Professor of Agriculture and in Charge of Civil Engineering.

B. S., Michigan Agricultural College, 1885: Graduate student at Michigan Agricultural College, 1890-1891; Assistant Agriculturist, R. I. Experiment Station, 1891-1894; Appointed Assistant Professor of Agriculture, R. I. College of Agriculture and Mechanic Arts, 1893; Appointed in Charge of Civil Engineering, 1895.

THOMAS CARROLL RODMAN,

Instructor in Woodwork.

Appointed, 1890.

MARY POWELL HELME,

Instructor in Drawing.

Student at Friends' School, Providence, R.I., 1879-1882; Associate Instructor in Drawing and Painting, Friends' School, 1883-1891; Appointed Instructor in Drawing, 1892; Pupil of Mrs Rhoda Holmes Nichols, Augustus St. Gaudens, and William M. Chase.

ANNA BROWN PECKHAM, A. B.,

Instructor in Languages and History.

A. B., Wellesley College, 1893; Instructor in Public School, Kingston, R. I., 1893-1894; Appointed Instructor in Languages and History, 1894.

ARTHUR CURTIS SCOTT, B. S.,

Instructor in Physics.

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Harvard University, summer course in Physics, 1895; Appointed Instructor in Physics, 1895; Student at The Cornell University, summer course in Physics, 1896.

GEORGE BURLEIGH KNIGHT,

Instructor in Iron Work.

Appointed, 1896.

CHARLES SHERMAN CLARKE, B. S.,

Assistant in Mechanics.

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Mechanics, 1895.

JOHN FRANKLIN KNOWLES, B. S.,

Instructor in Woodwork.

B. S., R. I. College of Agriculture and Mechanic Arts, 1894; Appointed Assistant in Mechanics, 1894; Appointed Instructor in Woodwork, 1896.

LUCY HARRIET PUTNAM,

Instructor in Expression,

Graduate of School of Expression, Boston, Mass., 1896; Instructor at summer session of School of Expression, Plymouth, Mass., 1896; Appointed Instructor in Expression, 1896.

CHARLES HENRY HOWARD STONE, B. S.,

Instructor in Chemistry,

B. S., Massachusetts Institute of Technology, 1896; Appointed Instructor in Chemistry, 1896.

HOWLAND BURDICK, B. S.,

Assistant in Agriculture,

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Agriculture, 1893.

JOHN EDWARD HAMMOND, B. S.,

Assistant in Agriculture.

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Agriculture, 1896.

CHARLES FRANKLIN KENYON,

Assistant in Chemistry.

NATHANIEL HELME,

Meteorologist.

COLLEGE CALENDAR.

1897.

WINTER TERM.

January 4. 1.00 P. M.	Term begins.
January 28.	Day of Prayer for Colleges.
February 22.	Washington's Birthday.
March 26.	Term ends.

SPRING TERM.

April 5. 1 P. M.	Term begins.
————	Arbor Day.
May 30	Memorial Day.
June 7	Senior Examinations begin.
June 13.	Baccalaureate Sunday.
June 15.	Commencement.
June 19, 10 A. M.	Entrance Examinations.

FALL TERM.

September 1. 10 A. M.	Entrance Examinations.
September 20, 10 A. M.	Entrance Examinations.
September 21, 1 P. M.	Term begins.
————	Thanksgiving Day.
December 24.	Term ends.

1898.

WINTER TERM.

January 3, 1 P. M.	Term begins.
March 25.	Term ends.

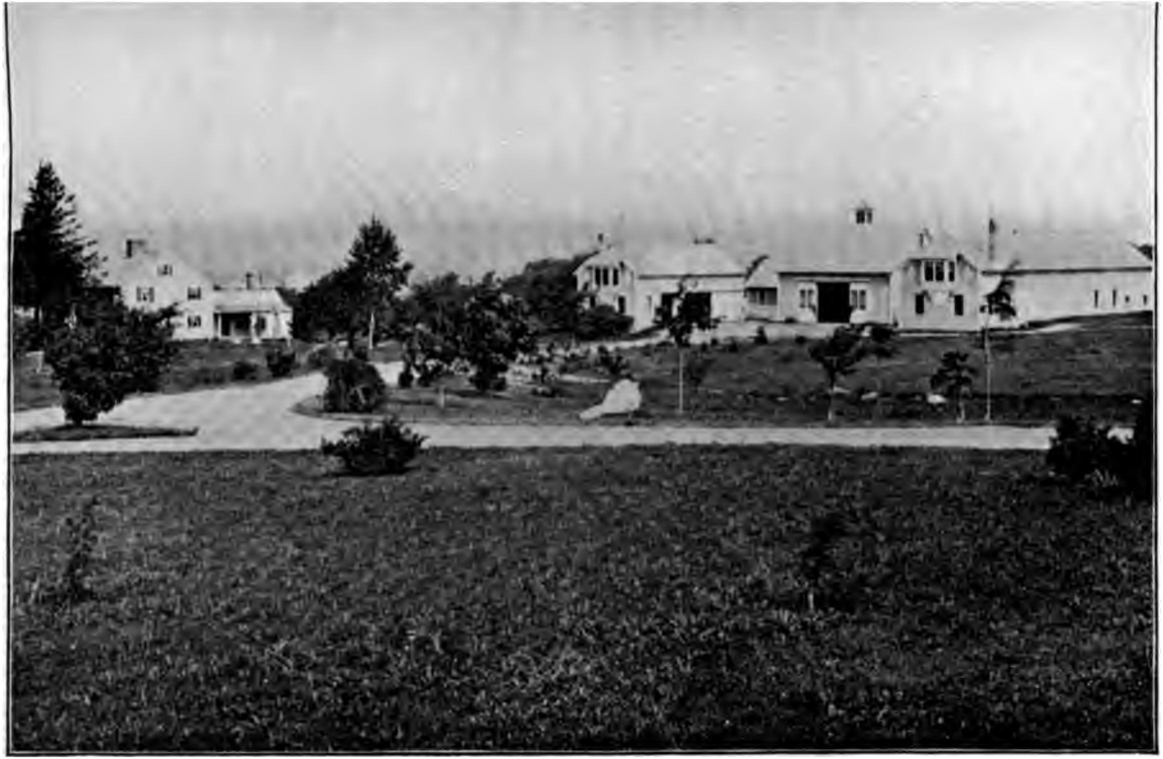
SPRING TERM.

April 4.	Term begins.
June 12.	Baccalaureate Sunday.
June 14	Term ends.

EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D.	President of the College.
CHARLES O. FLAGG, B. S.	Director and Agriculturist.
H. J. WHEELER, Ph. D.	Chemist.
L. F. KINNEY, B. S.	Horticulturist.
GEORGE W. FIELD, Ph. D.	Biologist.
J. D. TOWAR, B. S.	Assistant Agriculturist.
GEORGE M. TUCKER, B. S.	Assistant Agriculturist.
B. E. HARTWELL, B. S.	Assistant Chemist.
C. L. SARGENT, B. S.	Assistant Chemist.
GEORGE E. ADAMS, B. S.	Assistant Horticulturist.
NATHANIEL HELME	Meteorologist.
BERTHA E. BENTLEY	Clerk.

The Experiment Station Council consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.



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I States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating $15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.*

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded that had dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

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*See Bulletin No. 1 of Experiment Station.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6.)

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with $15,000, and continuing with a yearly increase of $1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Laws, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis, with an entirely new course of study.

On April 19, 1894, the Legislature passed an act authorizing the State Treasurer to pay Brown University the sum of $40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

On January 27, 1895, the college dormitory was destroyed by fire, but it was replaced by a new granite building which was ready for use the first of October.

GROWTH DURING 1896.

On January 8, 1896, the Board of Managers appointed Dr. Arthur A. Brigham Professor of Agriculture, to begin his duties the following September upon his return from Germany. The usefulness of our facilities for agricultural instruction is very much impaired by the lack of a barn and a dairy. The College owns but one small barn, which was formerly used for horses and a small herd of cattle ; but the request of the State Legislature, that we provide means of transportation for our students between the College and the railroad station, made it necssary for us to take for more horses the portion of the barn then used for cattle. The department has funds ready to buy cattle for purposes of agricultural instruction, but this cannot be done until the State furnishes a suitable barn for them. It is to be hoped that we may soon have these accommodations, as they will add very materially to the value of Dr. Brigham's equipment, and to the economy of the institution. Then the milk and butter used by the boarding department can be produced here at the College, and at the same time our agricultural students will have a practical illustration of economical dairy management, together with laboratory practice in that line.

At the opening of the fall term, Dr. George W. Field entered upon his work here as Professor of Zoölogy. At the same time our English department was enlarged by the appointment of Miss Lucy H. Putnam as Instructor in Expression. Mr. Howland Burdick and Mr. J. E. Hammond have been made assistants to Dr. Brigham; Mr. Burdick having general supervision of the farm, and Mr. Hammond of the poultry department. Mr. C. H. H. Stone, a graduate of the Massachusetts Institute of Technology, has been appointed instructor in chemistry, and placed in charge of the chemical laboratory.

The entering class for 1896 was larger than that of any previous year, forty-seven out of sixty-eight applicants having been admitted. A number of students have been admitted to advanced standing. Each year as the various departments become better equipped with apparatus, books and other facilities for instruction, there is a corresponding improvement in the quality of the work done. At a meeting of the Presidents of Agricultural Colleges and Directors of Experiment Stations, held at Washington,

D. C., November 10, 1896, the Association adopted the report the Committee on Entrance Requirements, Courses of Study a Degrees, appointed in November, 1894. Among the recommen ations of this report are the following:

"ARTICLE I. SECTION 1. Congress, in establishing and endowing the stitutions known as the Land-Grant Colleges, evidently intended that their w for the classes they were designed to benefit should be, as far as practicab uniform in scope and character in the different states and territories. * * * *

SEC. 2. The act of 1890, further endowing these colleges, points to their velopment along certain specified lines. In conformity with the spirit of t act, these institutions are constantly tending to become schools or institutes technology. That they must be collegiate in scope is required by the law itse

SEC. 3. The steadily increasing tendency to ignore and obliterate all state lin in scientific and educational work; the free intercourse in social and industr life among the people of the several states, and, in consequence, the stead broadening field of usefulness and activity open to the graduates of educatio institutions; the association of the Land-Grant Colleges into a national org ization for the protection and promotion of their common interests; the incre ing recognition by the national government of the importance and promise the work of these colleges—all these considerations make it desirable that degree or degrees awarded by these colleges should represent work appro ately uniform in character and scope; should be, in other words, degrees of s recognized value as to pass current, each the equivalent of the others, in a state or territory.

SEC. 4. * * * * * In some states, for some time to come, concess must be made to the defective condition of the public school system. But it no means follows that in making such concessions the colleges are prohibit from protecting their standards of work and graduation. These, by proper e fort, may be maintained and made to conform in educational value to those the colleges which are more happily situated. Moreover, a certain communit of interest makes it the duty of each college to protect at the same time its ow reputation for thorough educational work and the reputation of its sister inst tutions.

* * * * * * * *

SEC 7. It is desirable, also, that the Bachelor's degree or degrees should re resent an approximate uniformity in the amount of work done in the seve colleges. * * * * *"

In accordance with the above recommendations, which ha been adopted by all the other land-grant colleges of the United States, and in order to have the work of the Rhode Island college of equal grade with that done in the other states, it becomes necessary for us to raise our standard, requiring for admission to the courses leading to a degree the work now done in our Freshman year, together with one year of language, which may be either German, French, or Latin. This change in our admission requirements might, however, shut out certain pupils coming from our country schools, whom we wish to reach. It is, therefore, thought wise for the present to have a preparatory department, open to those who wish to avail themselves of the educational advantages of the college, but who have not access to schools affording the requisite preparation for entrance to the regular college course. By this means such a student can prepare himself for this course, or can choose special lines of work. It is considered advisable not to attempt this change of course until September, 1898, after which time the examination for admission to the preparatory department will be the same as that for entrance to the present college course.

OBJECT OF THE INSTITUTION.

The institution is intended to give technical instruction in agriculture, the mechanic arts, and the sciences, to *anyone* prepared to take advantage of any of the courses offered. Short courses in agriculture and certain lines of mechanics, and special work in science, are open to those unable to take up the regular college work. For these courses no examination is required, except such as will satisfy the professor in charge of any branch chosen that the applicant is prepared to derive benefit from the work he wishes to elect. Whenever possible, however, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is believed that no such thorough preparation can be obtained fr special courses elected by the student.

REQUIREMENTS FOR ADMISSION, 1897.

Candidates for admission must bring testimonials of good cha acter and must be not less than fifteen years of age. Oral a written examinations will be given in advanced arithmetic, geo raphy, English grammar, and United States history. Each ca didate will be required to write a short composition upon a su ject announced at the time of the examination. The compositi will be expected to show familiarity with the works mentione below: Hawthorne's Wonder Book, Dickens's Christmas Car Irving's Sketch Book, Scott's Lady of the Lake, Longfello Evangeline. Applicants for the regular course will find so knowledge of algebra of great assistance.

On and after September, 1898, the above will be the requi ments for admission to the preparatory department.

Students entering the preparatory department, which will o in 1898, may take, together with the regular studies of t course, any other work from the college courses for which th are prepared.

REQUIREMENTS FOR ADMISSION, 1898.

Candidates for admission to the Freshman class will be exa ined in arithmetic; algebra; plane geometry; English gramma advanced English; United States history; geography, physic and political; physiology; one year of German, French, or Lati

In the arithmetic examination especial attention will be paid t fractions, the metric system, simple and compound proportio and square and cube root; thorough drill in mental arithmet will be necessary. The applicant should have mastered all Wells's Academic or Wentworth's School Algebra, and Well Plane Geometry, or their equivalents. In geography, familiari with some common school text-book will be expected. Frye's Geography is recommended. In physiology, a knowledge of some standard text-book is required, such as Martin's Human Body (Briefer Course). The history requirements will be met by familiarity with Fiske's or some similar United States history. The examination in English grammar will include definitions, formation of plurals, inflection of nouns, pronouns and verbs, comparison of adjectives and adverbs, analysis and parsing, with especial attention to punctuation and the use of capitals. The advanced English requirements are those prescribed for entrance to the New England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter, and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. The books prescribed for 1898 are the following: (*a*) Milton's Paradise Lost, books I and II; Pope's Iliad, books I and XXII; The Sir Roger de Coverley Papers, in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's Rime of the Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. (*b*) Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's Flight of a Tartar Tribe; Tennyson's The Princess. The language requirements will cover one year's work in either French, German, or Latin. In French and German, this requirement comprises the essentials of grammar, easy reading, and elementary composition. In Latin, the candidate must be prepared to study Cæsar. The following text-books are recommended: Chardenal's Complete French Course, Lyon and De Larpent's Primary French Translation Book; the

ADMISSION TO ADVANCED STANDING.

Candidates may enter any of the higher classes for whose work they are prepared.

OPPORTUNITIES OFFERED TO WOMEN.

The courses offered to men are open to women, together with special courses. The women's dormitory will accommodate a limited number of students, and the College will on application find boarding-places for others in private families in town. Special waiting and study rooms are provided for the women who are day students.

EXPENSES. *

Tuition is free to all Rhode Island pupils. The regular expenses are tabulated below:

	Per Year.	
	Minimum.	Maximum.
Room rent, $2 per term	$6 00	$6 00
Board, $3 per week, for 36 weeks	108 00	108 00
Fuel, spring and fall terms, each $3, winter term $6	12 00	12 00
Light, $1 to $3 per term	3 00	9 00
Books	15 00	30 00
Washing, 30c. to 60c. per week	10 80	21 60
Uniform for military drill, $15	7 50	30 00
Reading room tax, 25c. per term	75	75
General expense, for damage in buildings, etc., 50c. per term	1 50	1 50
Laboratory fees, $2 to $10 per term	6 00	30 00
	$170 55	$248 85

The amount of laboratory fees depends upon the laboratory work taken each term. One dollar per term is charged for each of the following: Botanical, zoölogical and physical laboratories; carpenter shop; wood-turning; forge shop; machine shop and

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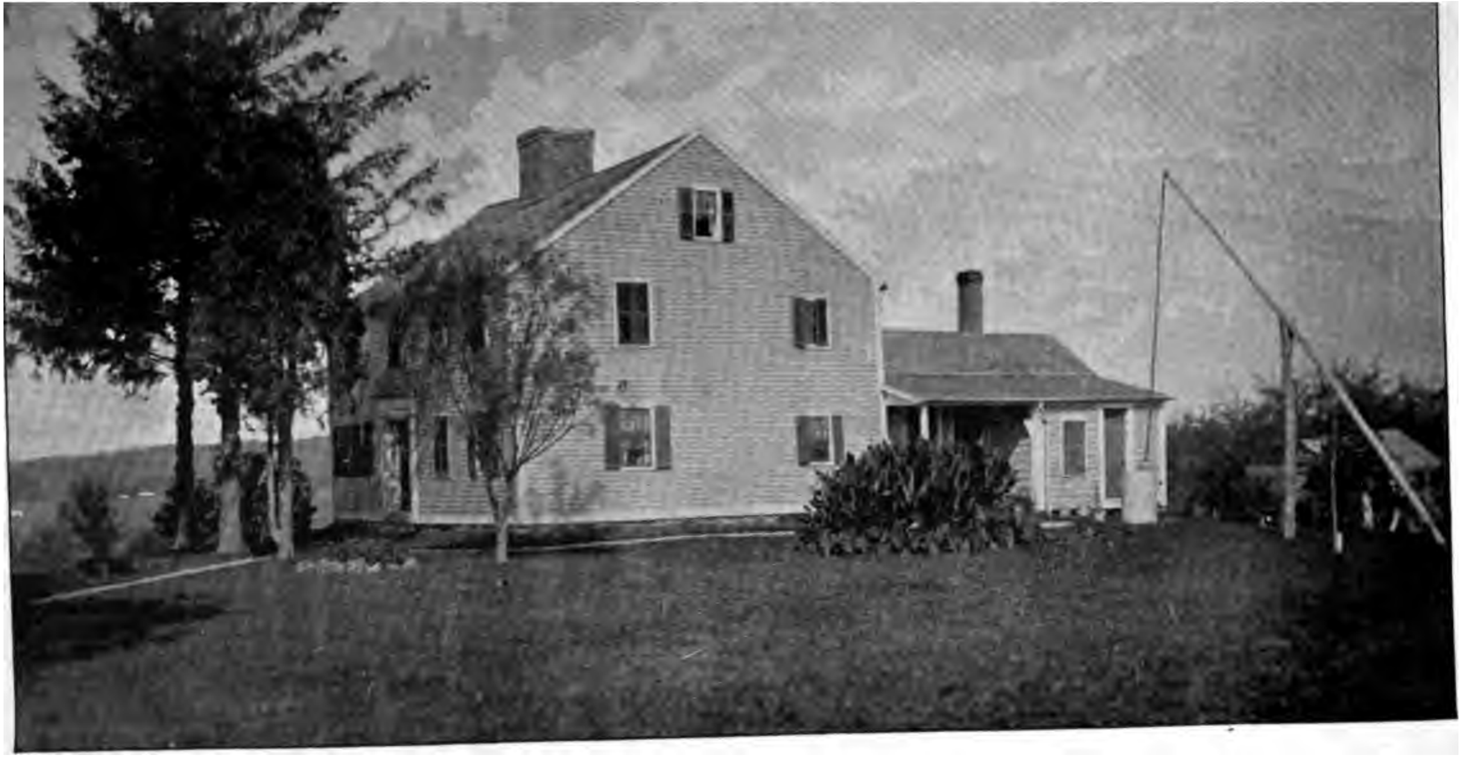
* For exceptions in the expenses for women, see p. 20.



WOMEN'S DORMITORY.

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wood-carving. This pays for the material ordinarily used in class work and for the wear and care of tools and apparatus. Any person who breaks apparatus or tools through carelessness or neglect of instructions will be charged the cost of the same. The chemical laboratory fee is three dollars per term for qualitative, quantitative and organic laboratory work. This covers general chemicals and use of apparatus. Students are required to pay for breakage and for any chemicals they may use in making special preparations for themselves. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. Every able-bodied male student is required to drill and to wear a uniform. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time. A reduction of fifty cents per week on board is allowed to students going home Friday afternoon and returning Monday forenoon, provided that notice of the intended absence is given in advance. Those failing to give such notice will be charged full price for board. No other reduction is made for less than three whole days' absence at one time, and this only when notice is given as above. Fifteen cents extra is charged for each meal sent to a student's room, from sickness or any other cause. The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term a team conveys trunks to and from the station. All students in the men's dormitory are required to supply their own furniture and bedding. The necessary furniture may be obtained at the college when desired. A room may be furnished for from eight to ten dollars. Iron bedsteads, three feet wide, and curtains are included under room-rent. The furniture, if properly kept, may be sold when the student leaves for one-half to three-fourths the original price. All clothing should be distinctly marked. Graduates pay the cost of diplomas, five dollars. No diploma will be issued until the candidate has paid all term bills. Day students are required to deposit ten dollars per term in advance. Boarding students may pay term bills in advance, deposit fifty dollars each term, or give bond for two hundred dollars fo payment of all bills. No bond will be accepted from any me of the faculty.

EXPENSES FOR WOMEN.

Board, including room-rent, is three dollars per week. and lights are supplied at cost. Rooms are furnished, with exception of bedding and towels. Other expenses are as g above. The women have opportunity to do their own was and ironing.

SELF-HELP.

A limited amount of work about the buildings, on the far the experiment station, and in the laboratories, will be furni to students who desire it, and who prove industrious and t worthy. Good students who desire to help in paying thei penses should be able to earn from twenty-five to one hun dollars per year, depending upon the amount of time they spare from their studies. No work is given students who hav a fair standing in their classes. The larger sums can be ea only by students who spend their vacations here at work. T opportunities are offered only to students who show a sense o sponsibility in the performance of the duties assigned to t and a disposition to render a fair equivalent of work for the pensation they receive.

REGULATIONS OF THE COLLEGE.

Students who do not understand the elements of gentlem conduct will not continue to be members of the institution. ligence or absence from class duties of any kind will be vigor opposed. Students are expected to attend all recitations. excuse for absence from a single exercise is not required. supposed that the student will not absent himself unless he sufficient reason for doing so, and of this reason he must himself be judge. Any student absenting himself from more than ten per cent. of the total number of recitations in any subject shall not be allowed to take his examination in that subject, but shall be conditioned. Examinations of conditioned students shall be held only on the first day of each term. Any student who after such examination shall still have three or more conditions shall be obliged to withdraw from the college. Students still having not more than two conditions may take second examinations at the next regular time, and failing to pass shall have no further opportunity to remove such conditions except by special vote of the faculty.

Students rooming in the dormitory are expected to conduct themselves with the same decorum as in a private house. Any undue noise or actions liable to disturb the other occupants of the building will cause the offender to be publicly warned, and on a repetition of the offence he will be dismissed from the dormitory, for a stated time or permanently, according to the nature of the offence. Money paid for dormitory expenses will not be returned to any student thus dismissed.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day. Absence from chapel must be reported at the President's office for excuse on Tuesday morning of each week. A branch of the Intercollegiate Young Men's Christian Association is doing good work among the students; meetings are held every Wednesday evening. Eminent preachers are from time to time invited to address the students.

LOCATION.

The College is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles

from the railroad station. A macadamized road leads fro
grounds to the station, insuring at all times a good walk
drive. The railroad station is situated on the New York,
Haven & Hartford R. R., with twenty-one trains daily, i
winter, stopping at Kingston, and more in the summer. The
is a very healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

CHEMISTRY.

Instruction in chemistry begins with the third term of the Sophomore year, and consists of recitations and lectures with laboratory work. Any branch of chemistry may be elected for special work. After 1897 a chemical course will be offered. General chemistry is taught during the last term of the Sophomore and the first term of the Junior year, in two hours of recitation and lectures and four hours of laboratory work each week. Special attention is given to inorganic preparations and problems, the student performing the work for himself. Qualitative analysis extends through two terms, and is followed by volumetric and quantitative analysis. A course in organic chemistry, in the winter term of the Junior year, treats of the hydrocarbons and their derivatives as far as the benzene series, two hours per week being devoted to recitations and lectures and four hours to laboratory work. The class work is based upon Remsen's Organic Chemistry, and the laboratory practice on Gatterman's Practical Methods of Organic Chemistry. An elective on the benzene series, with two hours of recitation and two hours of laboratory practice per week, is given in the spring term. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion; analysis of soils, fodders, and fertilizers, milk, butter, and cheese; tests for poisons in the stomachs of different animals; analysis of fruits for sugar, starch, and albuminoids; and the study of chemical changes in soils. Women may substitute for agricultural chemistry an elective on the chemistry of cooking. A five-hour course in sanitary chemistry or in physiological chemistry may be taken by students who have completed courses I., II., III., and IV. Elective work in the dyeing of wool, cotton and silk, and of mixtures of the same, is offered to those who have finished the courses in general and organic chemistry and quantative analysis.

PHYSICS.

The instruction in physics begins with the first term, Sophomore year, and consists of lectures and recitations attended by all regular students. The various branches grouped under this head are treated both mathematically and experimentally, particular attention being given to practical application. Sound and heat are studied in the fall term, magnetism and electricity in the winter term, and light and mechanics in the spring term. To the subject of electricity the whole of the winter term is devoted. As much valuable apparatus has been added during the past year, the facilities for instruction have been greatly increased. The study of light embraces an extended discussion of photography, photo-micrography, the use of the microscope and of the projecting lantern. The study of lantern manipulation is of especial value to those who intend to become teachers, and this department is fully equipped to illustrate the use of any form of light employed at the present time in projection work, together with all accessories including the projection microscope and apparatus for the projection of photographs in original color.

A course in advanced physics is open to all students who have completed course I. or its equivalent. This course includes a deeper and more theoretical study of the subjects of course I., and is treated by lectures and recitations, together with an extended course in laboratory work designed to make the student more careful and accurate in his work and to encourage original investigation.

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A special course in electricity is now open to all students having an elementary knowledge of the subject. As a foundation for subsequent work, instruction is given in the theory of electricity, together with thorough consideration of the various technical applications of electricity, including land and sub-marine telegraphy, the telephone, electric lighting, and the electrical generation and transmission of power. Advanced instruction is given in electrical measurements, including the use of the storage battery, (which is constantly becoming more valuable to electric plants), methods of electrolysis, electro-plating and electro-metallurgy, together with a practical understanding of generators and the testing of telegraph and telephone lines.

Special instruction in photography is offered in an elective course to students who have an elementary knowledge of physics and chemistry. The course embraces lectures and recitations upon the subject, together with practical methods of photography in the working of negatives, photographs, bromide enlargements and lantern slides. The college is provided with the most approved form of apparatus for X-ray photography, and the theory of the work in this line is taught, together with its practical applications.

The new laboratory which will be in use by this department after 1897, will add greatly to facilities for instruction to advanced students.

PHYSIOGRAPHY.

The Freshman class study physiography during the first term, with three exercises per week of recitation and one of laboratory work, with occasional excursions and field work. A well equipped physiographic laboratory, with globes, models, maps, charts and other illustrative material, together with a special library, is open to the students. Especial attention is given to the scientific phases of the study,—to the chemistry and geology of the soils, the influence of air and water on the same; and some reading and tries. Tarr's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. Five hundred lantern slides illustrating ethnological subjects are projected and explained before the class. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

AGRICULTURAL GEOLOGY.

The course in agricultural geology embraces structural, dynamical and historical geology, particular attention being paid to the first-mentioned subdivision. A careful study is made of those minerals and rocks of importance in the formation of soils, of the agencies by which their decomposition is effected, and of the compounds which result. In this connection, the instruction is designed to familiarize the student with the desirable mineral and physical features of soils, with those compounds the presence of which is undesirable or which may give rise to a greater or less degree of soil sterility, and with the means by which such conditions may be avoided or overcome. A proportionate amount of time is devoted to the history of those natural deposits of particular interest to agriculturists; such as, nitrate of soda, the German potash salts, and phosphates of various kinds.

BOTANY.

The required work in botany for students in mechanics covers two terms; and for students in agriculture, three terms. The first two terms are devoted to the study of a few groups of plants from the lowest to the highest. Seed-plants of economic importance are studied in the third term. Work may be elected by agricultural and mechanical students as indicated in the Courses of Instruction.

Each student is supplied with a compound microscope, a dissecting microscope, reagents and small instruments. The laboratory is provided with apparatus for simple physiological experiments, a microtome, paraffin bath, a set of Frank and Tschirch charts, thirty Brendel models, Briosi and Cavara's Parasitic Fungi of cultivated plants, Ellis's Fungi Columbiani, and an increasing collection of native plants. A good working library and several American and foreign periodicals are an important part of the equipment of the laboratory.

For the course of study which will be given by this department after 1898, see pp. 65–71.

COMPARATIVE ANATOMY AND PHYSIOLOGY.

First Year.—Elementary anatomy and physiology through the winter and spring terms.

Third Year.—Comparative anatomy, chiefly of the vertebrated animals during the winter and spring terms.

Fourth Year.—Advanced anatomy and physiology, comparative anatomy, comparative physiology and microscopic anatomy through the entire year; veterinary science during the winter term; physiological psychology through the spring term.

This department has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration, there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Leuckart's zoölogical wall-charts, and other charts and diagrams of our own make, (5) ample blackboard facilities of which much is made, chemical and physical apparatus, (7) all necessary mechanical pliances. The collection of skeletons of all the domestic anin cannot be excelled. In the class of birds, there have been ad all the species of Rhode Island, comprising some 270 individu These prove of exceptional interest and stimulate inquiry bec of their local habitat and more or less familiar mien. In the lection are found the skeletons of the great classes of birds sh ing striking structural peculiarities. It is also proposed to the nests and eggs of all those species of the collection w nest in the State. It will thus be seen that there is an except ally good equipment for teaching the courses in zoölogy, phy ogy, and anatomy, both human and comparative, which ar liberally provided for in this College.

Apparatus is being collected for the course in experimental chology. The course occupies but one term and the time g to experimentation is limited. The demonstrations are si mechanical appliances to illustrate the sensations and percepti But few experiments are attempted on the more complex me phenomena, which require intricate and costly appliances, m time, and more special training than the college students summon. The beautiful models and charts of the human b spinal cord, and organs of special sense, are most serviceabl teaching the mechanism and functions of the great nerve cen The appliances in this department are so complete as to exp the study in no small degree. It is believed that a more livel terest is thus created, that more ground is covered, and th clearer comprehension of this branch is given than could o wise be done in twice the time allotted to it. The same claim be predicated of the whole range of biological studies.

ZOÖLOGY.

This department is open to students who have done satisfa work in the course in biology of plants, or an equivalent. T are two general courses; for Sophomores in animal biology, and for Juniors in zoölogy. Instruction in animal biology embraces a careful treatment, through the laboratory, lecture and text-book, of the general anatomical, physiological and developmental phenomena of animal life; the conditions and the causes of the broad manifestations of life, in the cell, in the individual, and in the race. The types studied are: Amœba, Paramœcium, Vorticella, Hydra, earthworm, frog. Among the questions dealt with are the meaning of such terms as protoplasm, nutrition, growth, reproduction, life, death, the physiological division of labor, heredity, the views held by the different schools of evolutionists, the variation of species, effect of environment, natural selection, parasitism, and geographical distribution. In brief, it is a course adapted for the general student, who wishes a knowledge sufficient to comprehend and to profit by the important current discussions bearing upon man's relations to his environment; at the same time it gives a broad foundation for one who plans to enter upon a career in biological science, either as teacher, investigator, or medical practitioner.

The course in zoölogy is intended especially for (1) agricultural students, (2) students who are preparing for entrance to the medical profession, (3) those who having pursued the courses in plant and animal biology wish to advance further into the science as teachers and investigators. Instruction is by actual dissection of the fresh specimens supplemented by lectures, text-book and written exercises.

Proximity to seacoast renders possible the study under natural conditions, as well as in aquaria, of the habits and development of many marine animals. The Experiment Station's Marine Laboratory under the direction of the professor of zoölogy, is open to students who show capacity for effective work. It is located on the shores of the town, near Point Judith, and offers excellent opportunities for original investigation and experimentation upon problems of marine biology. Further opportunities for study are furnished by springs, streams, ponds (natural and artificial), and lakes, upon or immediately adjacent to the college grounds. These added to the location of the college township—in the southeast corner of Rhode Island, with its diversity of coast line, the east on Narragansett Bay, its south shore on the Atlantic—renders the institution an ideal locality for biological study.

The department is provided with Leuckart's charts; Ziegler's and other models; preparations of skins and skeletons of typical vertebrated animals; preserved specimens and preparations of the most important invertebrated forms; aquaria for living specimens; projection lantern for class demonstration of macroscopic and microscopic preparations. The department library includes the best literature on the subject; all of the current zoölogical journals are available, either at the Experiment Station library or by special arrangements. The collection illustrating the zoölogy of Rhode Island is the best in the State, and is steadily growing.

Advanced courses are open to students who have had the requisite training. Comparative normal histology, dealing with the microscopical structure of cells and tissues of the organs of the lower and of the higher animals, including modern methods of micro-chemical technique and histological investigation, is a course particularly adapted for students who intend to fit themselves for the medical profession. The course in morphology of the invertebrated animals offers an opportunity for careful study of the marine forms found in Narragansett Bay, and in addition certain typical forms from abroad. A course in comparative osteology of the vertebrated animals permits an extension of the courses in comparative anatomy. Comparative embryology is offered as a special course to students who are sufficiently advanced. General comparative embryology is covered in the courses in plant and animal biology.

Students who wish to make a specialty of biological science for the purpose of becoming science teachers or of pursuing a medical course are advised to give the utmost possible attention to physiography; chemistry; physics; English; German; French; Latin; freehand drawing, including water colors; civil govern-

THE HORTICULTURAL DEPARTMENT.

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nent and political economy, in addition to the biological sciences.

Students are urged to consult freely with their instructors in egard to selection of courses.

AGRICULTURE.

In connection with the new course in agriculture as proposed on page 72 it may be said that the foundation instruction in the science of agriculture is largely given in the study of chemistry, botany, physics, geology, anatomy, physiology, zoölogy, and economy. Following upon this fundamental knowledge, it is the aim in the agricultural course to teach the student the practical application of the scientific principles underlying technical agriculture. This is sought to be accomplished by means of lectures and recitations and by the use of text-books and reference books so far as available. The chief desire is to supplement and enforce and fix this instruction by what may be termed laboratory work in agriculture; that is, by actual educational practice in the different branches of farming.

Commencing in the spring term of the Freshman year, an introduction is given in the form of lectures dealing with the origin and necessity of agriculture, its relation to other occupations, the preparation for farming, the relations of air, water and sunshine and of plant and animal life to agriculture. In the Sophomore year, a study is made of farm soils,—their characteristics, classification and adaptions, their faults and means of improvement, clearing land and preparing for crops; land drainage, with practice in planning and constructing systems of underdraining on the college farm; irrigation and tillage. In the winter term, instruction is supplied in the construction, use and care of farm implements, machines and vehicles; and in the arrangement, construction and maintenance of farm buildings, fences, roads, and bridges. In the spring term, fertilization is dealt with, and the instruction is reinforced by object lessons offered by the fertilization experiments of this experiment station department and by the manuring of the farm crops. In the Junior year, horticulture is chiefly taught embracing the topics—garden crops, market-gardening and greenhouse culture, fruit culture, floriculture and ornamental gardening with plant breeding and forestry as special elective subjects. I the Senior year opportunity is provided to study live stock farming, including the breeds, breeding, care and management of farm animals; rational feeding of live stock; dairy; husbandry; poultry farming; farm management and accounts.

Further elective subjects are available to advanced students by special arrangement, including the history and economics of agriculture, agricultural and horticultural literature, farm law, apiculture, agricultural debate, and agricultural experimentation.

Plans for short courses in agriculture have been made. These courses will instruct special students in the principles and detail of the best modern practical dairy farming, poultry farming and horticulture. For putting these courses into operation the college awaits the providing by the state of suitable buildings. There are funds available for the purchase of live stock, apparatus and equipment, also for instruction. The provision of the needed buildings will at the same time greatly reinforce the means of instruction in the regular agricultural course.

HORTICULTURE.

For description of work offered under this department, see Agriculture.

LANGUAGES AND HISTORY.

The subjects grouped under this head are English, German French, Latin, expression, and history.

English—comprising composition, rhetoric, and literature—i studied during the four years. In the Freshman year, a preparatory review is followed by an elementary course of rhetori Written exercises are required, and there is a careful reading i the class room of representative works by famous authors, principally American, with the aim of developing early in the student a taste for literature. More advanced work in rhetoric and composition is given during the fall and winter terms of the Sophomore year, and the reading of American authors is continued. The winter and spring terms of the Junior year are devoted to general English literature. English history is studied at the same time, as it is thought impossible to understand an author apart from his age. Individual research is encouraged, and will increase, it is hoped, from year to year. As far as possible, entire works of the most noted authors are critically read in class. Exercises in composition give opportunity for detailed treatment of special topics. An elective in English literature, designed to supplement the general course, is offered throughout the Senior year; and Seniors may also elect essay writing and orations.

German is required throughout the Junior year, and is elective during the Senior year. As far as possible, the language itself is made the medium of instruction, and the subject is studied in grammar work, dictation, conversation, and translation—from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts.

French is required throughout the Sophomore year, and is elective during the remaining two years. It is the aim of the department to make the instruction in this language similar to that given in German, with the expectation that the results will be greater in consequence of the longer time allotted to the subject. French, like German, is taught by means of grammar, conversation, dictation, translation, and composition. Progressive work throughout the three years will make it possible for the student at graduation to read with ease ordinary French, both literary and scientific.

Latin is elective throughout the course. The instruction is designed to acquaint the student with certain literary masterpieces, to aid him in comprehending the terminology of science, to facili-

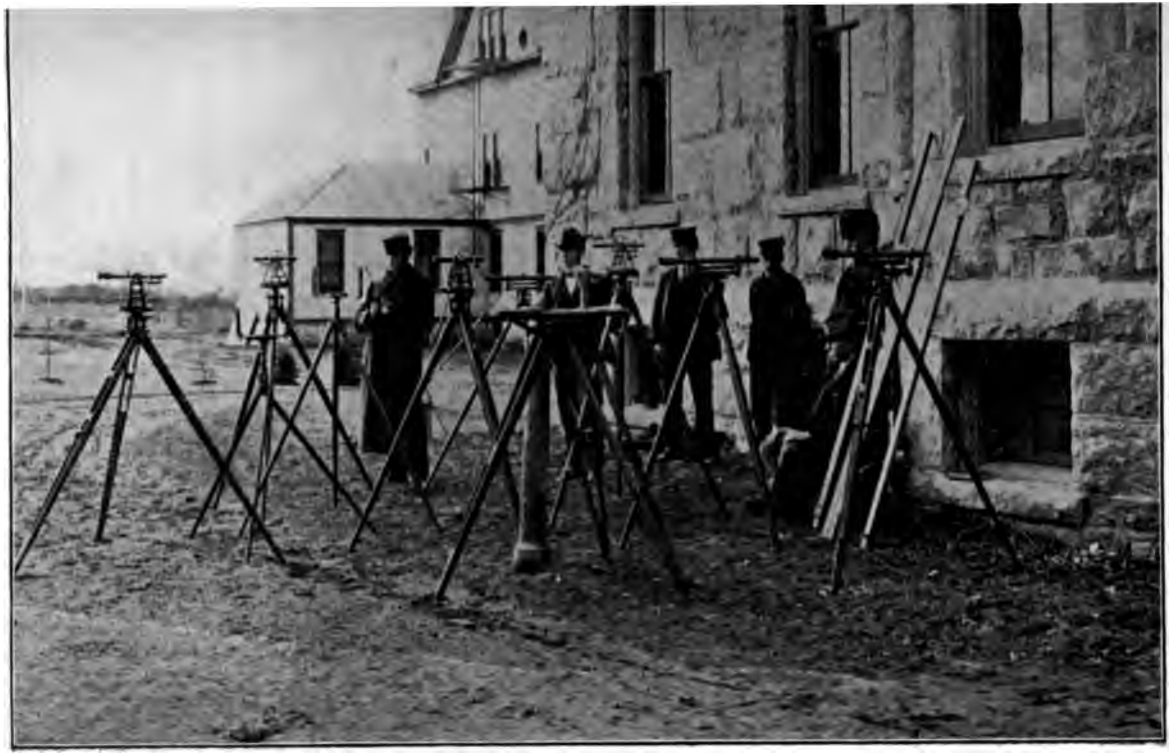
The aim of the course in expression is to teach the student to read easily and intelligently and to think accurately and rapidly. The work consists of sight reading, extemporaneous speaking, recitations, and the delivery of original orations. Expression is required throughout the Freshman year, and is elective during the other three years.

In the fall term of the Freshman year, a careful review is made of American history, followed in the other two terms by outline work in general history. The method is topical. No one textbook is used, but students are taught to consult various authorities and to report upon what they have read. In the Junior year, English history is studied in connection with English literature; and an elective for special historical work is offered in the spring term of the Senior year. A carefully selected library, which is constantly receiving additions, greatly enhances the value of these historical and literary courses.

Beginning with September, 1898, the work of the department will be changed to suit the needs of the advanced courses outlined on pp. 65–71.

MATHEMATICS AND ASTRONOMY.

Three courses in pure mathematics are required of all candidates for a degree, namely, algebra, plane geometry and plane trigonometry. The work in algebra consists of a systematic drill in the fundamental operations, simple and quadratic equations, the theory of exponents, radicals, the progressions, the binomial formula, and the graphic representation of equations. Especial attention is given to the expression, by means of equations, of the conditions of a problem. In the course in plane geometry particular stress is laid upon the original demonstration of propositions, in order best to develop the rigidly logical methods of thought which are the outcome of exact geometrical work. Numerical problems and practical applications are given whenever possible. This course is followed by a course in plane trigonometry, in which the fundamental formulas are developed and application of



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them is made in the solution of right and oblique triangles. The subject of logarithms is studied and sufficient applications are made thoroughly to familiarize the student with this invaluable aid to computation. It is the aim here, as throughout the course, to select such problems and applications as shall have direct bearing upon practical subjects.

The required work in pure mathematics ends at this point for students in the agricultural course. Candidates for a degree in the mechanical course are required to take in addition, solid geometry, analytical geometry and calculus. In the course in solid geometry are studied the point, the line and the plane in space, the familiar polyedrons, the cylinder, cone and sphere, including the measurement of these solid figures. The course in analytical geometry includes the subject of loci and their equations, the analytical demonstration of many geometrical theorems, and the simpler properties of the conic sections. The work in calculus includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiation, and the integration of simple functions, illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for integration are studied and a short time is devoted to the interesting subject of curve-tracing.

The primary aim of the entire course in mathematics is to stimulate original work, to insist upon and develop a capacity for clear thinking and logical, systematic reasoning such as will prove invaluable in any department of study or life, as well as to achieve familiarity with such mathematical principles as are necessary for applied work.

A growing reference library affords an opportunity for wider mathematical reading, the value of which is constantly becoming more fully appreciated by the students.

Several elective courses are offered by the department, and others will be added from time to time as may seem advisable.

In pure mathematics courses are offered in college algebra, open to all who have completed the required work in algebra; in modern synthetic geometry, open to all students who have completed the required courses in algebra and plane geometry; in elementary curve-tracing, open to all students who have completed the required courses in algebra and plane geometry; in the theory of equations, with determinants; in advanced integral calculus; in spherical and higher plane trigonometry, and in solid analytical geometry.

The courses in applied mathematics will be found under the heads of civil engineering, mechanics and astronomy.

Two elective courses are offered in astronomy, one in practical astronomy, in which the simpler problems of practical astronomy are discussed, and a lecture course in physical astronomy, the aim of which is to make the students familiar with the general characteristics of the various members of the solar system, and to emphasize the general laws which govern the universe. A four-inch equatorial telescope, an eighteen-inch celestial globe, a large collection of lantern-slides of astronomical phenomena and a small but carefully chosen reference library, add greatly to the resources of the department.

In civil engineering, four courses are offered. The Freshmen are given practice with leveling instruments in connection with the work in drainage. Plane surveying is taken up by the Agricultural Sophomores in the spring term and is followed by a course in leveling, grading, and road construction during the first term of the Junior year. This work is supplemented by practice with the compass, chain and transit in measuring areas and plotting land as well as work with the levels, drawing profiles, and establishing grade lines for roads. More advanced work in engineering is offered the Seniors in the spring term, while throughout the course practical surveying is given, those students desirous of doing extra work in this line.

For new courses to be offered by the department in 1898 see pp. 65–71.

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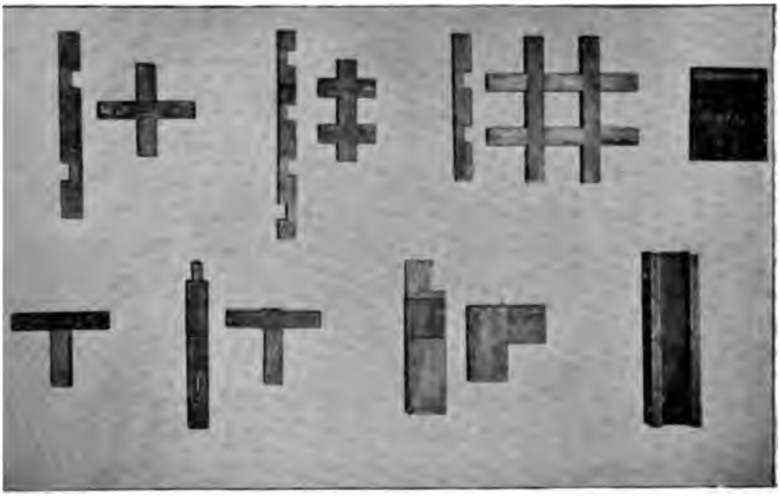
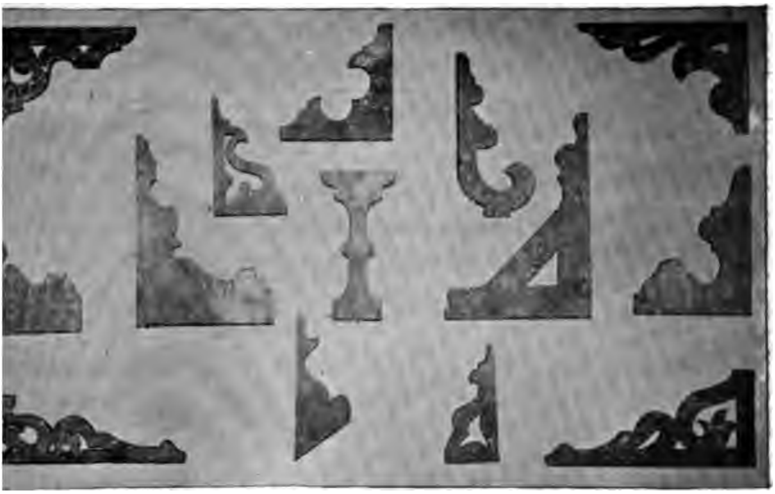


COURSE OF JOINERY.



COURSE IN SCROLL SAWING.

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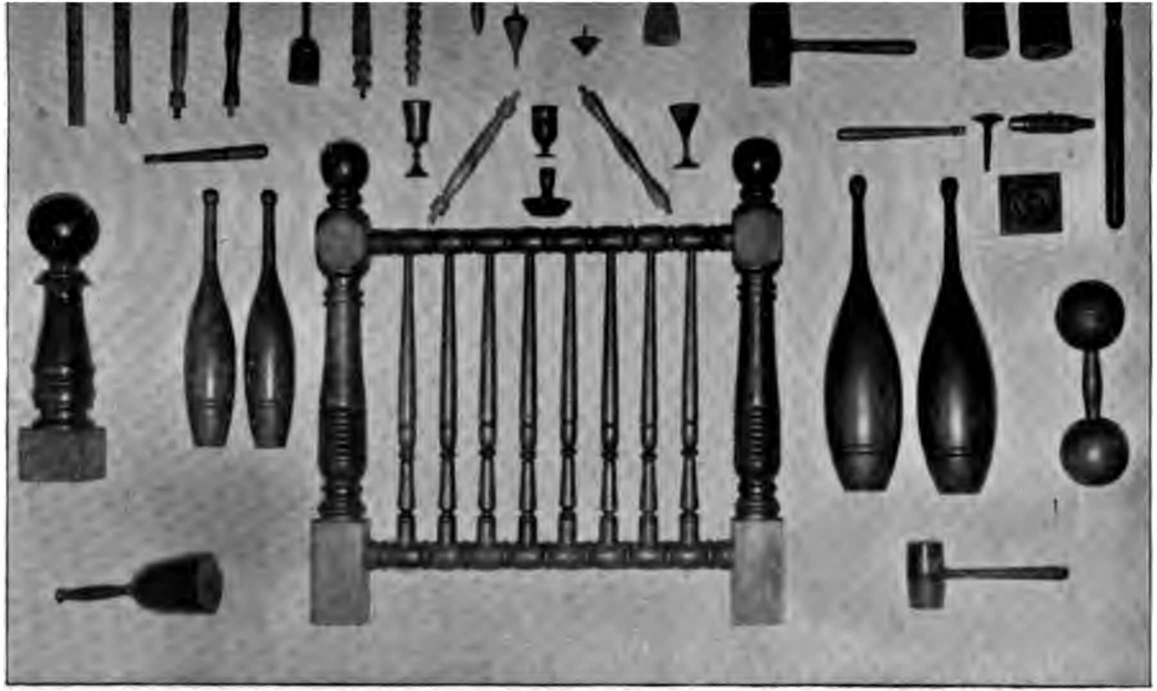

COURSE IN WOOD-TURNING.

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THE WOOD-WORKING MACHINERY.

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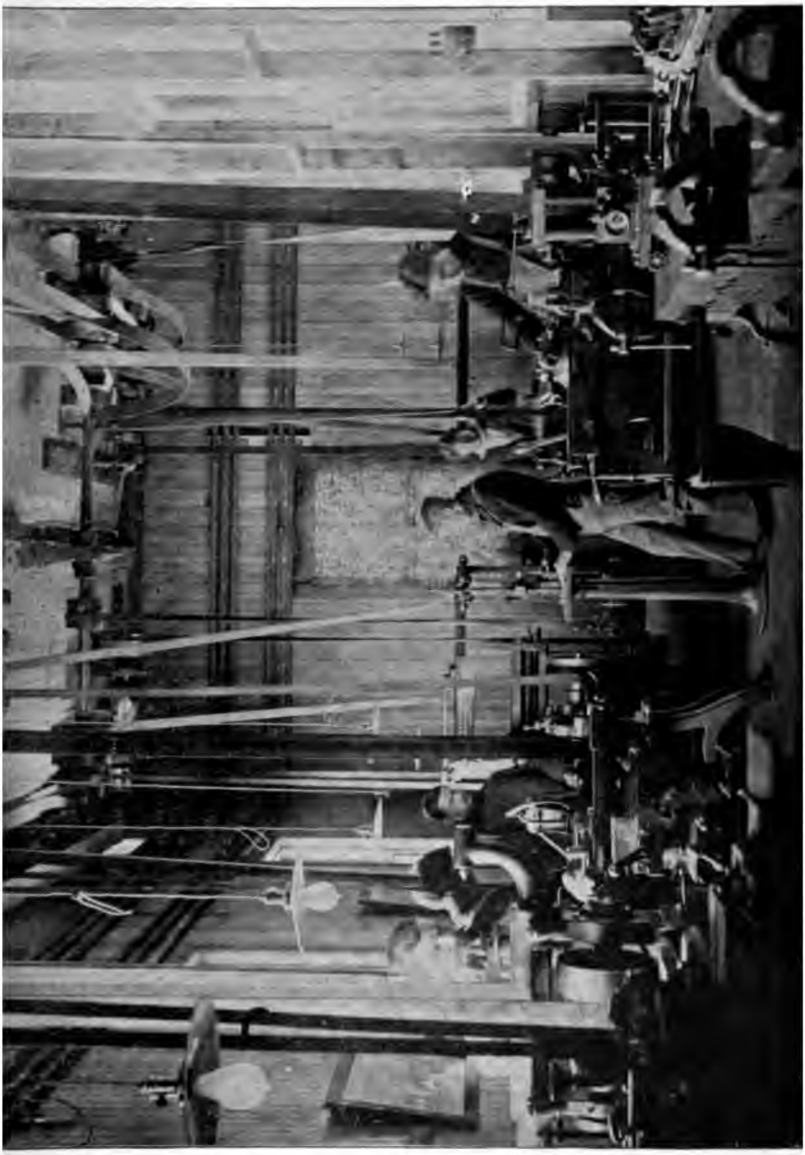
PATTERN-MAKING.



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MECHANICAL ENGINEERING.

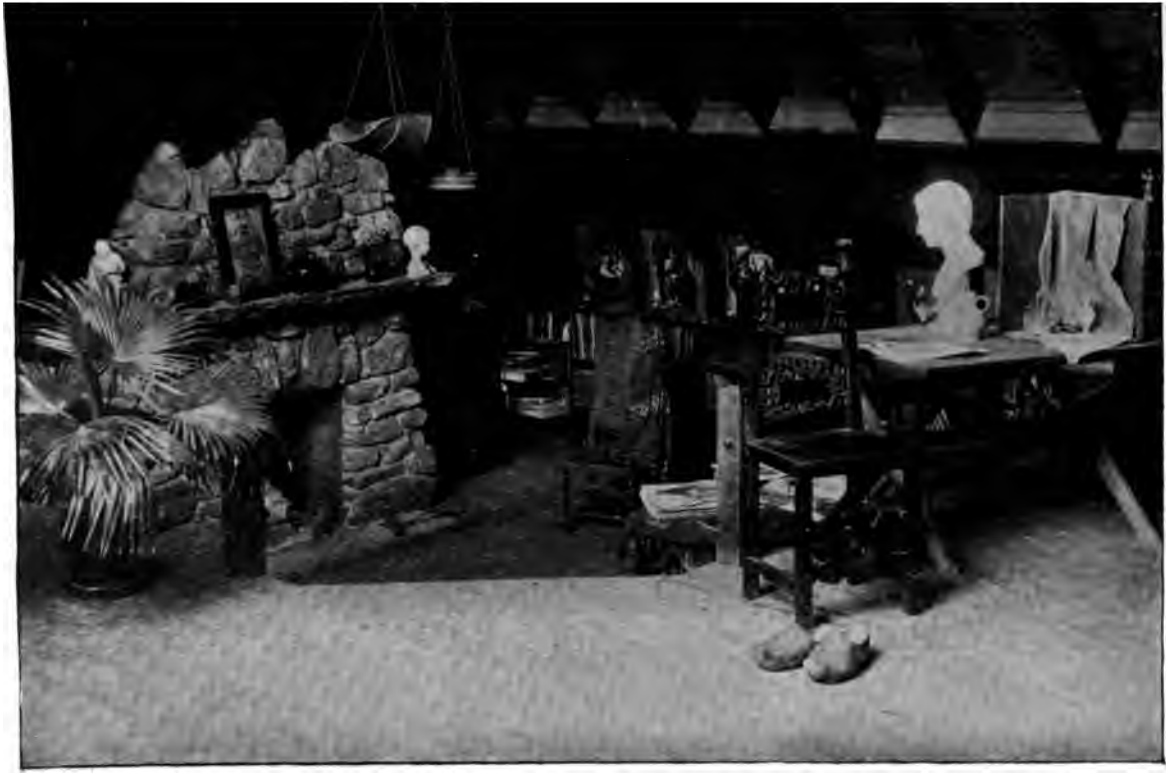
The aim of this department is to give sound theoretical and thorough practical training to students who seek to prepare themselves for useful and responsible positions. No attempt is made to teach trades; but the course offered in shop-work will furnish such training as will ensure, other things being equal, marked success in mechanical pursuits subsequent to graduation. The regular four years' course deals with mechanical engineering as applicable to the industries carried on in New England, and particularly in Rhode Island. Special attention is given to the designs and the economical operation of shops and mills, and of manufacturing and industrial machinery. Thorough courses in mathematics, physics, chemistry, electricity, English, French, and German are made the basis of this work. The subjects of mechanism, metallurgy, heating and ventilation of buildings, engineering specifications, and laws of contracts are treated by lectures and text-books. The several laboratories are well-equipped for working in wood and metals and for the testing of materials used in construction. Students in the department of mechanical engineering receive instruction in bench-work in wood, wood-turning, pattern-making, forging, machine-shop work, and mechanical drawing.

Students in the agricultural department receive instruction in wood-working and forging, and may elect other work with the advice and consent of the committee on studies. Women are given the opportunity to elect wood-carving at any time during the four years' course. During the winter term of three months, the shops are open to receive persons who may wish to enter the college and take up special work of a trade nature in any of the above lines. In addition to this work, these students may take a limited amount of time for the study of any related subject.

The carpenter shop contains benches and tools sufficient to accommodate twenty-four students at one time. The course is designed to give skill and confidence in working the various kinds of wood, and also to impart a fair knowledge of the principles of building and construction. A series of practical lectures upon the art of estimating the cost of various constructions of wood is given to the agricultural students of the Sophomore year. The wood-turning room contains thirteen lathes, each with its complete set of gouges and turning-tools. In the same room are benches for pattern-making, and also power machinery for working wood; such as, circular saw, hand saw, jig saw, surface planer, buzz planer, mortising machine, dowel machine and others. All students take wood-turning, and during the period each has practice under the direct charge of the engineer in care of the shop boiler and engine. This engine is of thirty horse power; and besides furnishing power for the shop, drives a ten K. W. dynamo for lighting the building. The work in pattern-making given to the students in the mechanical department in the Junior year consists of the making of selected pieces to illustrate the principles of shrinkage, drafts, finish, core-box making, built up work and the general requirements of pattern-making.

The forge shop will accommodate twelve students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the hammers, tongs, and other forge and anvil tools necessary for complete work. A regular course is followed here as in other lines; and for the students of the agricultural department, the work is of such a nature as is found about a farm. The various operations of drawing, bending, upsetting, and welding are taught and applied in the making of such useful pieces as staples, hooks, chains, and iron work for farm tools. The students of the mechanical department follow a similar course but in a direction more suited to the machine shop. Bolts, nuts, machine forgings, chisels, and lathe tools are made, and afterward put to practical use.

Only students in the mechanical department work in the machine shop. The course here is designed to give a sure knowledge and intelligent practice in the best modern methods of using the various tools; such as, lathes, planers, drills, milling-machines,



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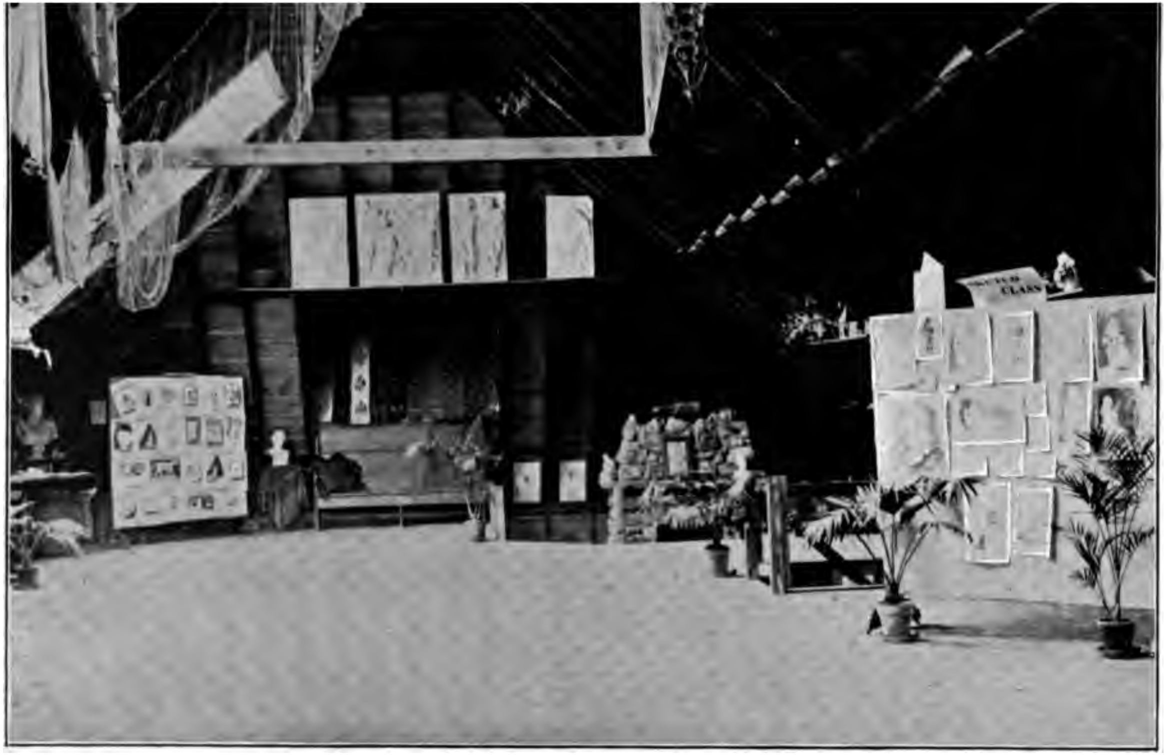

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and grinding machines. A course of hand work at the bench is offered, and includes instruction in chipping, filing, scraping, and finishing. Each student in the machine shop builds a complete machine before finishing the course. Students of former years have made an engine, dynamo, speed lathe, full set of arbors, set of nut arbors, and a variety of other tools.

In experimental engineering the students make tests of engines, boilers, pumps, steam gauges, injectors and a hydraulic ram. The strength of materials is investigated theoretically in class under the head of mechanics of materials, and practically in the laboratory by conducting tests upon specimens of wood, iron, steel, brick, stone, cement, boiler plate, etc. In hydraulics water meters are caliberated and measurements of water made by orifices and wiers. During the spring term of the Senior year the class in mechanical engineering holds semi-weekly conferences; reports are given upon articles in the industrial magazines and journals, and engineering subjects of general interest are discussed. The following are some of the topics considered by the class of '95: types of steam boilers, furnaces, boiler feeders, fuels, lubricants, gas and heat engines, preparation and use of wood, cutting tools for metals, pumping machinery.

Mechanical drawing is taught throughout the Sophomore and Junior years. Students are required to keep notebooks, in which freehand sketches are made from models; and these sketches are afterward worked up into finished drawings. The making of working drawings for some machine completes the course. Practice in tracing and blue printing is given to all students. The course in drawing is designed to aid in the corresponding courses of shop work and not to produce professional draughtsmen.

FREEHAND DRAWING AND MODELING.—Freehand drawing is taught only in the spring and fall terms. Freshmen begin in the spring term with the study of values from objects and still life, continuing in the fall to draw and model from casts, with which the department is well supplied. In the Junior and Senior years, students may elect such work as they are prepared to take. Memory sketches of all objects drawn are expected of each student. The sketch class is an interesting feature of the department. This meets for one hour once a week and is conducted by its members, who pose in turn or find a substitute. These time sketches from life, without instruction, are of great benefit to the student, teaching him to note quickly the effect desired. Each student is required to leave at the college a specimen of his work. Modeling is limited to ten or twelve lessons in the Sophomore year. The library of the studio has a good nucleus of art books.

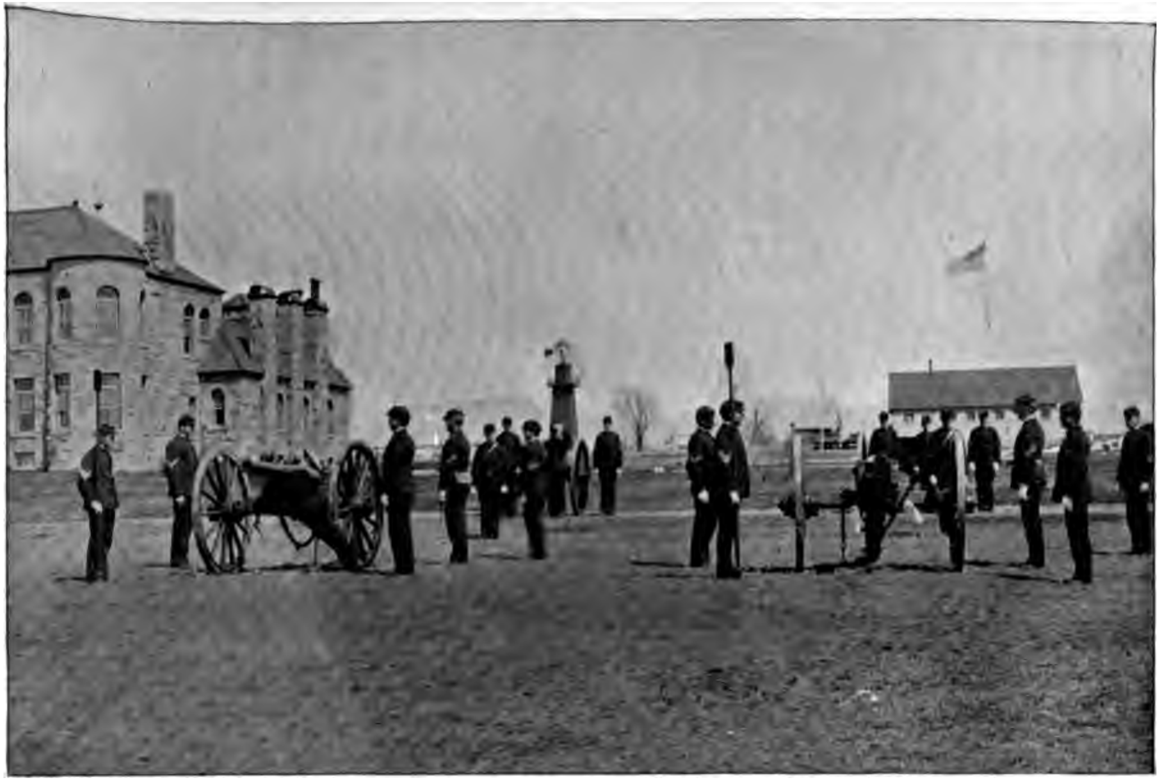
MILITARY SCIENCE AND TACTICS.

The military department is duly organized under Captain William W. Wotherspoon of the 12th Infantry, who was assigned to duty as Professor of Military Science and Tactics by the President of the United States, by special orders No. 257 from the war department, dated November 1, 1894.

The men students are organized as a battalion of two companies. Four batteries of artillery have been organized, and are drilled in the spring and fall.

There have been two classes under instruction in signaling, and the Seniors and Juniors have a course of military science. No effort has been spared to instill into the cadets a sense of the importance of the work undertaken, while producing a proper and healthful carriage of the body and that quickness and readiness to obey which are necessary in a soldier. The progress made is most satisfactory, and evinces an enthusiasm and intelligence on the part of the cadets which cannot be too highly commended. They have been quick to learn, ready to obey, at all times respectful in deportment and neat in their habits.

The inspections in quarters have resulted in marked improvement in the rooms. All orders have been obeyed; and as the inspections become more rigid, as they will, matters in the dormitory will be much changed.



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INFANTRY DRILL.

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The cadets have been uniformed at a very moderate expense in a neat and handsome uniform of fine blue cloth, consisting of a blouse and trousers cut after the pattern worn by the U. S. naval cadets, with forage caps holding the coat of arms of the State of Rhode Island. This uniform is not only handsome and economical but with moderate care will last a long time. It is recommended that white collars and an overcoat be added to it, and that the overcoat be worn at all times out of doors during winter. As at present organized, each company has a full set of officers and non-commissioned officers, who are zealous and painstaking in their duties and show much promise.

The greatest difficulty found so far in this department has been the weather and the limited space under cover for drill. When the weather would permit, drill has been held out of doors; at other times, in the temporary shed built for the purpose. No hours have been lost for any cause, however, and the drill hall and gymnasium now proposed will, it is hoped, be finished in time for next winter. When it is finished, the college will be equipped with a drill hall superior to that of any institution of learning in the United States, and with a gymnasium equal to the

COURSES OF INSTRUCTION.

The following courses of instruction are offered in the di departments. All studies required of regular students l the degree of Bachelor of Science.

CHEMISTRY.

I. General Chemistry, Briefer Course.—Non-metals. tions, lectures and laboratory work. *Spring term, Sophomor* recitations and lectures, *3 exercises per week;* laboratory w *exercise of 2 hours per week. Required of all candidates fo* *gree.*

II. General Chemistry.—Metals. Lectures and labo work. *Fall term, Junior year; 3 exercises per week. Requi* *all candidates for a degree.*

III. Qualitative Analysis.—Laboratory work. *Fall term,* *year; 2 exercises of 2 hours each per week; Winter term, 2 ex* *of 3 hours each per week. Required of all candidates for a*

IV. Organic Chemistry.—Lectures, recitations and labo work. *Winter term, Junior year; 4 exercises per week. Re* *of Agricultural students.*

V. Organic Chemistry.—Lectures and laboratory work. *ercises per week. Elective; open to students who have taken* *IV.*

VI. Agricultural Chemistry.—Lectures and laboratory work. *Spring term, Junior year; 3 exercises per week.* Laboratory work. *Fall term, Senior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VII. Quantitative Analysis.—Laboratory work. *Spring term, Junior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VIII. Courses in Theoretical or Sanitary Chemistry or Quantitative Analysis.—Laboratory work. *Throughout the Senior year; 2 exercises of 3 hours each per week. Elective; open to students who have taken courses I. and II.*

IX. Dyeing of Textile Fabrics.— *Winter and spring terms, Senior year; 3 hours per week. Elective; open to students who have taken courses I V. and VII.*

PHYSICS.

I. General Course. — Study of sound and heat, *Fall term;* electricity and magnetism, *Winter term;* light, mechanics, hydraulics and pneumatics, *Spring term, Sophomore year.* Recitations, *3 exercises per week;* laboratory work, *1 exercise of 2 hours per week. Required of all candidates for a degree.*

II. *Advanced Physics.*—Throughout the year. Recitation, *1 exercise per week.* Laboratory work, *2 exercises of 3 hours each per week. Elective; open to students who have taken course I.*

II. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Spring term, Senior year;* lectures, *3 exercises per week.* Laboratory work, *1 exercise of 2 hours per week. Elective; open to students who have taken course I.*

IV. Photography.—A course of lectures and recitations upon the optics and chemistry of photography, together with practical photographical work. *Spring term;* lectures, *2 exercises per week;* laboratory work, *2 exercises of 3 hours each per week. Elective; open to all students.*

Tarr's Physical Geography, with required reading from reference books. Laboratory work and excursions. *Fall term, Freshman year; 4 exercises per week. Required of all candidates for a degree.*

GEOLOGY.

Agricultural Geology. Lectures and recitations. *Winter term of Senior year; 2 exercises per week. Required of Agricultural students, elective for mechanical students.*

BOTANY.

I. Biology of Plants.—Comparative morphology and physiology are emphasized rather than the details of classification. Laboratory, reading and lectures. *Winter and Spring terms, Sophomore year; 4 exercises of 2 hours each per week. Required of all candidates for a degree.*

II. Systematic and Economic.—Seed-plants of economic importance are studied from fresh and preserved material. Special topics in physiology. *Fall term, Junior year;* recitation, *1 exercise per week;* laboratory work, *2 exercises of 2 hours each per week. Required of Agricultural students. Elective for mechanical students and specials who have taken course I.*

III. Fungi.—A study of fungi with special reference to parasitic forms of economic importance. Laboratory, reading and lectures. *Elective; open to students who have taken courses I. and II. or courses I. and V. Hours arranged with instructor.*

IV. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *Elective; open to students who have taken course I.*

V. A study of the Spring Flora of Kingston, with practice in the identification of species. *Spring term;* field and laboratory work, *1 exercise per week. Elective; open to students who have taken course I.*

PHYSIOLOGY.

I. Elementary Course in Human Physiology.—Lectures and recitations. Includes instruction in hygiene, and in development of observing faculties. *Winter term, Freshman year; 3 exercises per week. Spring term, Freshman year; 2 exercises per week. Required of all candidates for a degree. Elective for special students.*

II. Advanced Course.—Comparative Anatomy and Physiology. Presupposes knowledge of chemistry and animal biology. Instruction demonstrative, comparative, theoretical. *Fall term, Senior year; 4 exercises per week. Winter term; 3 exercises per week. Required of Agricultural students.*

ZOÖLOGY.

I. Animal Biology.—*Spring term, Junior year; 3 exercises per week. Required of Agricultural students.*

II. Zoölogy.—*Fall term, Senior year; 3 exercises per week. Elective; open to students who have taken course I.*

III. Comparative Normal Histology. *Elective. Hours arranged with instructor.*

IV. Morphology of the Invertebrated Animals. *Fall term. Elective. Hours arranged with instructor.*

V. Comparative Osteology of the Vertebrated Animals. *Winter term. Elective. Hours arranged with instructor.*

VI. Comparative Embryology. *Spring term. Elective. Hours arranged with instructor.*

VETERINARY SCIENCE.

Veterinary Science.—Theory of practice. Based on cours of comparative anatomy and physiology. *Spring term, Seni year; 4 exercises per week. Required of Agricultural students.*

PSYCHOLOGY.

Elementary Course.—Lectures, recitations, simple laborato experiments. *Spring term, Senior year; 3 exercises per we Elective.*

AGRICULTURE.

I. Agricultural Mechanics.—Similar to Mechanics XI. Aft the elementary mechanical exercises have been performed, ca penter-work such as would be used on the farm is taught. *F term, Freshman year; shop-work, 2 exercises of 3 hours per wee* Carpentering and practical construction in wood. *Winter ter Freshman year; shop-work, 2 exercises of three hours each p week. Required of all Freshmen.*

II. Farm Bookkeeping.—Inventory; use of day-book, cas book, and ledger on the farm; farm accounts; accounts wi stock, fields and crops; yearly statements; interest and discoun Classroom practice. *Winter term, Freshman year; 3 exercises p week. Required of all candidates for a degree.*

III. Drainage.—Drainage for Profit and Health (Waring Sources of water; necessity of drains; kinds of drains; ho drains act; how to lay out, build, and care for drains; drain til cost and value of drains; sanitary effects of drainage; pract in the use of tools and instruments; details of the work. Te book and actual practice. *Spring term, Freshman year; 2 exe cises of 2 hours each per week. Required of all candidates for degree.*

IV. Farm Crops and their Production.—Selection and preparation of soil and seed; quantity of seed; time of seeding; cultivation and harvesting of various farm crops; hay crop, its importance in agriculture; varieties of grasses; influence of time of cutting upon the value; method of storing; leguminous fodder crops; corn as a grain crop; five types of corn; corn and other crops for the silo. Other cereals—wheat, oats, barley and rye—origin, history and value; root crops—potatoes, beets, turnips, carrots and onions; miscellaneous crops—buckwheat, cabbages, pumpkins, squashes, field peas, tobacco, broom corn; weeds—injury, dissemination, and eradication. Text-book and lectures. *Fall term, Sophomore year; 2 exercises per week. Required of Agricultural students.*

V. Breeds of Live Stock.—Horses, Cattle, Sheep, and Swine (Curtis). Horses—draft, coach, saddle, thoroughbred, trotters, ponies-care and selection. Cattle—dairy, general purpose, beef-care, selection, and management. Sheep—short wool, middle wool, long wool-care, selection, and management. Swine—large breeds, medium breeds, small breeds-care, selection and management. Origin of breeds; adaptability to climates and conditions; tracing pedigrees; scoring animals. Text-book and lectures. *Fall term, Sophomore year; 3 exercises per week. Required of Agricultural students.*

VI. Agriculture (Storer). Relations of heat, air, and water to the soil; influence of soil, atmosphere, heat, light, and water upon the growth of plants; tillage and implements; natural sources of plant food; action of manures; special manures; phosphatic manures; nitrogenous compounds; green manuring; seaweeds; humus; farmyard manure; composts; modes of applying manures; night soil; history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. *Winter term, Junior year; 5 exer-*

cises per week: Spring term, Junior year; 2 exercises per week. quired of Agricultural students.

VII. Stock-breeding (Miles). Breeding as an art; heredi normal characteristics; diseases; acquired and abnormal cha teristics; atavism (reversion); law of correlation; variati fecundity; in and in breeding; cross-breeding; relative influe of parents; sex; pedigree; animal form and index of qualiti selections; period of gestation. Text-book. *Fall term, Se year; 3 exercises per week. Required of Agricultural students.*

VIII. Feeding Animals (Stewart).—Composition of animal b ies; relative proportion of different parts of the carcass; element food material; digestion, its effect upon food; respiration excretions; value of various animal manures; stock barns their relation to the economy of feeding; principles of alime tion; early maturity; how to feed young animals; stock foo nutritive ratio and feeding standards; definition of terms; cal lation of ratios for various conditions and ages of animals; culation of cost of rations, and their manurial value; soiling economy in land, fences, feed, and manure,—disadvantages, la required; soiling crops; ensilage; economy of preserving cr in the silo; variety of crops that may be ensilaged; value legumes and balancing rations; feeding for beef or milk; feedi horses, sheep and swine; cooked and uncooked food; cold a warm water; temperature of stables, and ventilation. Text-bo *Winter term, Senior year; 2 exercises per week. Required Agricultural students.*

IX. Fertilizers.—Study of the composition of the various ag cultural chemicals as sold in the markets; calculation of form for special crops; calculation and value of various home-ma fertilizers. Lectures and classroom calculations. *Spring ter Senior year; 1 exercise per week. Required of Agricultural st dents.*

X. Dairying. American dairying (Gurler).—The dairy cow-type, breeding, and management from birth to maturity; feed and management; branches of dairy husbandry; dairy utensils; milking; care of milk; separators and butter accumulators; separating cream; ripening and churning; salting, working, packing and printing butter. The Babcock milk test of skim milk and cream; value of skim milk; building creameries. Text-book and lectures. *Winter term, Senior year; 2 exercises per week. Elective.*

XI. *Apiary work.*—Classroom work upon the habits, care and management of bees, with practical work in the apiary. *Spring term, Senior year; 1 exercise per week. Elective.*

HORTICULTURE.

I. Elementary Horticulture.—A general course in the study of fruits, vegetables and flowers. Plants, soils and atmospheres are used as subjects of this study, and students are required to work out common problems involved in the cultivation of garden plants. *Fall term, Junior year; 4 exercises per week. Required of Agricultural students.*

II. Olericulture.—The study of garden vegetables. *Winter term, Junior year; 2 exercises per week. Elective.*

III. Floriculture.—The study of ornamental plants. *Spring term, Junior year; 2 exercises per week. Elective.*

IV. Pomology.—The study of orchard and garden fruits. *Fall term, Senior year; 4 exercises per week. Elective.*

V. Vegetable Pathology and Garden Entomology.—The study of the diseases and insect enemies of garden plants. *Winter term, Senior year; 3 exercises per week. Required of Agricultural students.*

VI. Horticultural Literature.— *Winter term, Senior year; 2 exercises per week. Elective.*

VII. **Landscape Gardening.**—The study of expressions plants, mainly of trees and shrubs, and ways of arranging th about buildings, avenues, etc., for the purpose of shelter and namentation. *Spring term, Senior year; 2 exercises per week. R quired of Agricultural students.*

ENGLISH.

I. Elementary Course.—Preparatory review. Study of repr sentative American authors. *Fall term, Freshman year; 5 exe cises per week. Required of all candidates for a degree.*

II. Middle Course.—Rhetoric. Continued study of Americ literature. Composition. *Winter term, Freshman year; 5 exe cises per week: Spring term, 4 exercises per week: Fall and Wi ter terms, Sophomore year; 2 exercises per week. Required of candidates for a degree.*

III. Advanced Course.—General English literature and h tory. *Winter and Spring terms, Junior year; 4 exercises per w Required of all candidates for a degree.*

IV. English Literature.—Study of special periods and autho *Throughout the Senior year; 3 exercises per week. Elective; open students who have taken courses I., II. and III.*

V. Orations and Essays. *Throughout the Senior year; 1 exe cise per week. Elective for all Seniors.*

GERMAN.

I. Elementary Course.—Grammar, dictation, conversatio reading of easy prose and poetry. *Throughout the Junior yea 3 exercises per week. Required of all candidates for a degree.*

II. Middle Course.—Intermediate reading. Composit *Fall term, Senior year; 3 exercises per week. Elective; open to s dents who have taken course I.*

III. Advanced Course.—German Classics. History of German literature. *Winter and Spring terms, Senior year; 3 exercises per week. Elective; open to students who have taken courses I. and II.*

IV. Scientific German. *Winter and Spring terms, Senior year; 2 exercises per week. Elective; open to students who have taken courses I. and II.*

V. Reading at Sight. *Throughout the Senior year; 1 exercise per week. Elective; open to students who have taken courses I. and II.*

FRENCH.

I. Elementary Course.—Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the Sophomore year; 3 exercises per week. Required of all candidates for a degree.*

II. Middle Course.—Intermediate reading. Composition. *Throughout the Junior year; 3 exercises per week. Elective; open to students who have taken course I.*

III. Advanced Course.—French classics. History of French literature. *Throughout the Senior year; 3 exercises per week. Elective; open to students who have taken courses I. and II.*

IV. Scientific French. *Throughout the Senior year; 2 exercises per week. Elective; open to students who have taken courses I. and II.*

V. Reading at Sight. *Throughout the Senior year; 1 exercise per week. Elective; open to students who have taken courses I. and II.*

LATIN.

I. Beginner's Latin Book. Grammar. *Throughout the Freshman year; 3 exercises per week. Elective.*

II. Cæsar. Composition. *Throughout the Sophomore year; 3* *exercises per week. Elective; open to students who have ta course I.*

III. Cicero. Composition. *Throughout the Junior year; 3 ercises per week. Elective; open to students who have taken cou I. and II.*

IV. Virgil. Composition. *Throughout the Senior year; 3 ex cises per week. Elective; open to students who have taken courses II. and III.*

EXPRESSION.

I. Elementary work in reading.—Elements of speech, arti lation, and sight reading. *Throughout the Freshman year; 1 ercise per week. Required of all candidates for a degree.*

II. Reading.—The cultivation of ease and naturalness. St of narrative poetry and prose. *Throughout the Sophomore ye 1 exercise per week. Elective.*

III. Reading and recitations.—Study of various forms of p try and prose. Extemporaneous speaking required during Spring term. *Throughout the Junior year; 1 exercise per we Elective.*

IV. Reading.—Shakespeare. Two extemporaneous speec and one original oration required each term. One public deb during the year. *Throughout the Senior year; 1 exercise per we Elective.*

HISTORY.

I. American History. *Fall term, Freshman year; 2 exerci per week. Required of all candidates for a degree.*

II. General History. *Winter and Spring terms, Fresh year; 2 exercises per week. Required of all candidates for a de*

III. English History and English Literature.—(Same as E lish 3). *Winter and Spring terms, Junior year; 4 exercises week. Required of all candidates for a degree.*

IV. Special Work for Individual Students. *Spring term, Senior year; 3 exercises per week. Elective; open to students who have taken courses I., II. and III.*

POLITICAL SCIENCE.

I. Science of Government.—Town, County, State, and United States. Their origin, development, and practices. Critical analysis of the Constitution of the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 exercises per week. Elective.*

II. Political Economy.—Elementary course. Based on Walker's Briefer Course, and Andrews' Institutes of Economics. Lectures, recitations, discussions, readings, original problems, citations from the daily press, and essays. *Winter term, Senior year; 4 exercises per week. Elective.*

MATHEMATICS.

I. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division, of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Freshman year; 5 exercises per week, Fall and Winter terms; 3 exercises per week, Spring term. Required of all candidates for a degree.*

II. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Spring term, Freshman year; 4 exercises per week. Fall term, Sophomore year; 5 exercises per week. Required of all candidates for a degree.*

III. Plane Trigonometry (Jones).—The derivation of the damental formulas; logarithms; the solution of right and ob triangles; practical problems. *Winter term, Sophomore ye exercises per week. Required of all candidates for a degree.*

IV. Solid Geometry (Wells).—Lines and planes in space; dral angles; polyhedral angles; polyhedrons; the cylinder, and sphere; measurement of the cylinder, cone and sphere merical examples and original demonstrations. *Spring Sophomore year; 3 exercises per week. Required of students i Mechanical course.*

V. Analytical Geometry (Hardy).—Coördinate systems; point; the line; relation between different coördinate syst the equation of the first degree, the straight line; the equati the second degree, the conic sections; higher plane curves. *and Winter terms, Junior year; 4 exercises per week. Req of students in the Mechanical course.*

VI. Calculus (Osborne).—The differentiation of algebraic, onometric, logarithmic, exponential and anti-trigonometric tions. Integration of fundamental forms; definite integrals plications to geometry and mechanics; successive differentia successive integration with applications; evaluation of indet nate forms; the development of functions in series; maxim minima; change of the independent variable; integratio rational fractions; integration by rationalization; integratio parts and by series; curve tracing. *Winter and Spring t Junior year, and Fall term of Senior year; 3 exercises per Required of students in the Mechanical course.*

VII. Higher Algebra (Taylor).—The theory of limits; d entiation; devolopment of functions in series; permutations combinations; probability; *Fall term; 2 exercises per week. tive; open to students who have completed course I.*

VIII. Curve tracing. Lecture course. The construction elementary properties of simple plane curves; symmetry; d eters; limits; asymptotes. *Winter term; 1 exercise per week. Elective; open to students who have completed courses I. and II.*

IX. Synthetic Geometry (Dupuis).—The point, line, and circle; comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Spring term; 3 exercises per week. Elective; open to students who have completed courses I. and II.*

X. Spherical and Higher Plane Trigonometry—(Chauvenet).—The derivation and application of the fundamental formulas; trigonometric series; the construction of trigonometric tables. *Winter term, 3 exercises per week. Elective; open to students who have completed courses I., II., III. and IV.*

XI. Theory of Equations with Determinants. Lecture course, with reference reading. *Fall term; 3 exercises per week. Elective, open to students who have completed course VII.*

XII. Advanced Calculus (Byerly).—An extension of course 10, including a further discussion of definite integrals; imaginaries, length of curves, areas, volumes, the elements of elliptic integrals, and of the theory of functions. *Winter and spring terms; 3 exercises per week. Elective; open to students who have completed course VI.*

XIII. Analytical Mechanics.—(Same as Mechanics 21). *Spring term; 3 exercises per week. Elective; open to students who have completed one term of course VI.*

XIV. Solid Analytical Geometry (Smith).—Theorems on the plane and the surfaces of the second degree. *Winter and spring terms; 3 exercises per week. Open to students who have completed course XI.*

ASTRONOMY.

I. Physical Astronomy.—Lecture course, illustrated with copious lantern slides, observations with a four inch telescope, trum sufficient to give an insight into modern methods of astronomical work. *Winter term, Senior year; 2 exercises per week. Elective; open to all Seniors.*

II. Practical Astronomy.—The use of instruments; the determination of time, of latitude, of longitude. *Spring term, Senior year; 2 exercises per week. Elective; open to Mechanical Seniors.*

CIVIL ENGINEERING.

I. Drainage Leveling.—Drawing contour lines, leveling, setting grade stakes, laying tiles and other work connected with Agriculture III. *Spring term, Freshman year; 2 exercises of two hours each per week. Required of all candidates for a degree.*

II. Plane Surveying (Carhart).—Elementary course, field work, recitation and plotting. Use of compass, transit and levels; adjustment of instruments; stadia surveying. *Spring term, Sophomore year; 1 exercise per week of class-room work, 2 exercises of three hours each of field work per week. Required of Agricultural students.*

III. Road Construction and Leveling (Spalding).—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term, Junior year; 3 exercises of text-book work and 1 exercise of three hours of field work per week. Required of students in the Agricultural course.*

IV. Civil Engineering.—A continuation of course II., embracing land, topographic and railroad surveying, the study of the use of engineer's tables and practice in overseeing under-classmen beginning the subject. *Fall and Spring term; 2 exercises of two hours each week. Elective; open to students who have completed course I.*

BOOKKEEPING.

I. Bookkeeping (Bryant and Stratton).—Explanation of commercial terms; single entry; double entry; use of books,—day book, cash-book, journal and ledger; practical exercises; original accounts; farm accounts; mechanic's accounts; inventory; statements; partnership; interest; discount; exercise in commercial forms—bills, receipts, checks, notes, orders, drafts. *Winter term, Freshman year; 1 lecture and 2 exercises of two hours each per week. Required of all candidates for a degree.*

MECHANICS.

I. Strength of Materials (Merriman).—Strength of wood, steel, alloys. stone, brick and cements. *Spring term, Junior year;* recitations, *3 exercises per week*, laboratory work, *1 exercise of 2 hours per week. Required of Mechanical students.*

II. Mechanism (Stahl & Woods).—Rectilinear motion; rotary motion; transmission of motion. *Spring term, Junior year; 2 exercises per week. Required of Mechanical students.*

III. Mechanics of Engineering (Church).—Bodies in equilibrium and in motion; work and power; friction of rest and motion; strength of simple beams, continuous beams, pipes and columns, arches. Recitations. *Fall term, Senior year; 5 exercises per week; Winter term, Senior year; 4 exercises per week.* Graphic statics, hydraulics and water-wheels. *Spring term, Senior year; 5 exercises per week. Required of Mechanical students.*

IV. Steam Engineering (Kinealy).—Study of steam and its properties; simple and compound engines; steam boilers. *Fall term, Senior year; 3 exercises per week. Elective.*

V. Metallurgy (Bloxam).—Study of the manufacture of cast iron, wrought iron, and steel; rolling-mill machinery; metallurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year; 3 exercises per week. Elective.*

VI. Mechanical Drawing. *Winter term, Sophomore year; 1 exercise of 2 hours per week. Required of Agricultural students.*

VII. Mechanical Drawing (Anthony). *Throughout the Sop more year; 2 exercises of 2 hours each per week. Required of E chanical students.*

VIII. Mechanical Drawing. *Throughout the Junior year, exercises of 2 hours per week. Required of Mechanical students*

IX. Mechanical Drawing.—Machine drawing and design. *F and Winter terms, Senior year; 1 exercise of 3 hours per week. quired of Mechanical students.*

X. Descriptive Geometry (Faunce).—Notation and element principles; problems on the point, line and plane; problems lating to the cylinder, cone and double curved surface of revo tion; intersection and development of planes and solids; practi problems. *Fall term, Junior year; 3 exrecises per week. Requi of Mechanical students.*

XI. Wood-working.—Use of tools, bench work and carpente ing. *Fall term, Freshman year;* shop-work, *2 exercises of 3 hou each per week. Required of all candidates for a degree.*

XII. Wood-turning. *Fall term, Sophomore year;* shop-wor *2 exercises of 3 hours each per week. Required of Mechanical st dents.*

XIII. Forging. *Fall term, Sophomore year;* shop-work, *1 e ercise of 3 hours per week. Required of Agricultural students.*

XIV. Wood-carving.—Care and use of tools, geometrical m tives, diaper patterns, incised carving, flat and curved surfa carving, historic ornament, low relief and high relief. *Elect throughout the course, 1 exercise of 3 hours per week.*

XV. Iron-work.—Forging, drawing, bending, welding and t dressing. *Winter term, Sophomore year;* shop-work, *2 exercise 3 hours each per week. Required of Mechanical students.*

XVI. Constructions, and Estimates of Cost. *Winter term, Sop omore year;* shop-work and lectures, *2 exercises of 2 hours ea per week. Required of Agricultural students.*

XVII. **Pattern-making.**—Principles of moulding and casting. *Spring term, Sophomore year;* shop-work, *1 exercise of 3 hours per week. Required of Mechanical students.*

XVIII. **Machine-shop Practice.** *Fall term, Junior year;* shop-work, *2 exercises of 3 hours per week. Required of Mechanical students.*

XIX. **Machine-shop Practice.** *Winter and Spring terms, Junior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

XX. **Machine Construction.** *Throughout the Senior year;* shop-work, *2 exercises of 3 hours each per week. Required of Mechanical students.*

XXI. **Analytical Mechanics** (Same as Mathematics XIII). *Spring term, Junior year. Elective; open to students who have completed one term of Mathematics VI.*

XXII. **Engineering Conferences.**—Subjects chosen by the class. *Spring term, Senior year; 2 exercises per week. Required of Mechanical students.*

DRAWING AND MODELING.

I. **Freehand Drawing.**—Drawing in charcoal from objects and still life. Special attention given to values. Memory sketches required. *Spring term, Freshman year; 2 exercises of two hours each. Required of all candidates for a degree.*

II. **Drawing from the cast in charcoal.**—Memory sketches required. *Fall term, Sophomore year; 1 exercise of two hours per week. Required of all candidates for a degree.*

III. **Drawing from life or the cast. Painting in oil, pastel or water color.** *Elective; open to students who have taken courses I. and II.*

IV. Modeling in clay from simple objects and casts. *Fa term, Sophomore year; 1 exercise of 2 hours per week. Requir of Agricultural students.*

MILITARY DRILL AND TACTICS.

I. Infantry Drill.—School of the soldier. School of the com pany. School of the battalion and small-arm target practic *Throughout the course, 3 exercises per week.*

II. Artillery Drill.—School of the soldier dismounted. Sab exercise and target practice. School of the battery dismount for selected detachments. Students in course 2 are selected the commandant from those reasonably proficient in course I.

III. Military Science. *Lectures given in Winter term.*

IV. Signal Drill.—With flags, torches, and telegraphic instr ments, according to the United States Signal code.

COURSE OF STUDY

OF THE

R. I. College of Agriculture and Mechanic Arts.

FRESHMAN YEAR.

FALL TERM.

	Exercises per week.		Exercises per week.
Physiography, I	4	Mathematics, I	5
English, I	5	Agriculture, I. or	2
History, I	2	Mechanics, XI	
Expression, I	1	Military Drill and Tactics	3

Electives—Latin, I. Mechanics, XIV.

WINTER TERM.

Physiology, I	3	Mathematics, I	1
English, II	5	Book-keeping, I.	3
History, II	2	Mechanics, XI	2
Expression, I	1	Military Drill and Tactics, I	3

Electives—Latin, I. Mechanics, XIV.

SPRING TERM.

Physiology, I	2	Mathematics, I	3
English, II	4	Mathematics, II	4
History, II	2	Agriculture, III. or	2
Expression, I	1	Civil Engineering, I	
Drawing, I	2	Military Drill and Tactics,	3

Electives—Latin, I. Mechanics, XIV.

SOPHOMORE YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	**Mechanical Course.**	Exerc per w
hysics, I	4	Physics, I	
Agriculture, IV	3	English, II	
Agriculture, V	3	French, I	
English, II	2	Mathematics, II	
French, I	3	Mechanics, VII	
Mathematics, II	5	Mechanics, XII	
Mechanics, XIII	1	Drawing, II	
Drawing, II	1	Military Drill and Tactics, I	
Modeling, IV	1		
Military Drill and Tactics, I	3		

* **Electives**—Latin, II. Mathematics, VII. Mechanics, XIV. Expression, II.

WINTER TERM.

Physics, I	4	Physics, I	
Botany, I	4	Botany, I	
English, II	2	English, II	
French, I	3	French, I	
Mathematics, II	3	Mathematics, III	
Mechanics, VII	1	Mechanics, VII	
Mechanics, XVI	2	Mechanics, XV	
Military Drill and Tactics, I	3	Military Drill and Tactics, I	

Electives—Latin, II. Mechanics, XIV. Expression, II. Mathematics, VI

SPRING TERM.

Chemistry, I	4	Chemistry, I	
Physics, I	4	Physics, I	
Botany, I	4	Botany, I	
French, I	3	French, I	
Civil Engineering, II	3	Mathematics, IV	
Military Drill and Tactics, I	3	Mechanics, VII	
		Mechanics, XVIII	
		Military Drill and Tactics, I.	

Electives—Latin, II. Mathematics, IX. Mechanics, XIV. Dra
Expression, II. Physics, IV.

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* A student may elect work offered to a lower class or to the other division of

JUNIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Chemistry, II	3	Chemistry, II	3
Chemistry, III	2	Chemistry, III	2
German, I	3	German, I	3
Civil Engineering, III	4	Mathematics, V	4
Botany, II	3	Mechanics, X	3
Horticulture, I	4	Mechanics, VIII	2
Military Drill and Tactics, I	3	Mechanics, XVIII	2
		Military Drill and Tactics, I	3

Electives—Physics, II. French, II. Latin, III. Mechanics, XIV. Drawing, III. Expression, III.

WINTER TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Chemistry, III	2	Chemistry, III	2
Chemistry, IV	4	English, III	4
English, III	4	German, I	3
German, I	3	Mathematics, V	4
Agriculture, VI	5	Mathematics, VI	3
Military Drill and Tactics, I	3	Mechanics, VIII	2
		Mechanics, XIX	1
		Military Drill and Tactics, I	3

Electives—Physics, II. Botany, III., IV. Horticulture, II. French, II. Latin, III. Mechanics, XIV. Military Drill and Tactics, III. Expression, III. Mathematics, X.

SPRING TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
English, III	4	English, III	4
German, I	3	German, I	3
Chemistry, VI	3	Mathematics, VI	3
Chemistry, VII	2	Mechanics, VIII	2
Zoölogy, I	4	Mechanics, II	2
Agriculture, VI	2	Mechanics, I	4
Military Drill and Tactics, I	3	Mechanics, XIX	1
		Military Drill and Tactics, I	3

Electives—Physics, II., IV. Botany, III., IV., V. Horticulture, III. French, II. Latin, III. Mechanics, XIV. Drawing, III. Expression, III. Mathematics, XIII.

*SENIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exerci per we
Chemistry, V	2	Mathematics, VI.	
Physiology, II	4	Mechanics, III	
Agriculture, VII	3	Mechanics, XX	
Military Drill and Tactics, I	3	Mechanics, IX	
		Military Drill and Tactics	

Electives—Chemistry, V., VIII. Physics, II. Botany, III., IV. Horticultu IV. English, IV., V. German, II., V. Latin, IV. French, III., IV., Political Science, I. Mathematics, XI. Mechanics, IV., XIV. Drawing, Zoölogy, II., III., IV. Expression, IV. Civil Engineering, IV.

WINTER TERM.

Physiology, II	3	Mechanics, III	
Geology, I	2	Mechanics, IX	
Agriculture, VIII	2	Mechanics, XX	
Horticulture, V	3	Military Drill and Tactics, I	
Military Drill and Tactics, I	3		

Electives—Chemistry, VIII., IX. Physics, II. Botany, III., IV. Agricultu X. Horticulture, VI. English, IV., V. German, III., IV.. V. Latin, French, III., IV., V. Political Science, II. Mathematics, XII., XIV. Mech ics, V., XIV. Military Drill and Tactics, III. Psychology, I. Expression, Zoölogy, III., V.

SPRING TERM.

Veterinary Science, I	4	Mechanics, III.	
Agriculture, IX	1	Mechanics, XX	
Horticulture, VII	2	Mechanics, XXII	
Military Drill and Tactics, I	3	Military Drill and Tactics, I	

Electives—Chemistry, VIII., IX. Physics, II., III., IV. Botany, III., IV. Agriculture, XI. English, IV., V. German, III., IV., V. Latin, IV. Fre III, IV., V. History, IV. Mathematics, XII., XIV. Astronomy. I., II. chanics, XIV. Drawing, III. Expression, IV. Civil Engineering, Zoölogy, III., IV.

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* The equivalent of 15 hours of recitation per week is required.

THE COURSES OF STUDY

TO BE ADOPTED IN 1898.

PREPARATORY.*

FALL TERM.		WINTER TERM.		SPRING TERM.	
h Grammar	5	Lockwood's Lessons in English	5	Lockwood's Lessons in English	
ntary French	3	Elementary French	3	Elementary French	
can History	3	American History	3	American History	
Geometry	5	Algebra	5	Algebra	
		Physiology	3	Physiology	

dents entering the preparatory department, which will open in 1898, may take, togethe the regular studies of this course, any other work from the college courses for whic re prepared, and which is possible with the arranged schedules.

FRESHMAN.

FALL TERM.

Physiography	4
Elementary Physics	4
College Algebra	4
Rhetoric	2
French or German	3
Freehand Drawing	1
Sketch Class (elective)	1

WINTER TERM.

Agricultural Course.		Mechanical Engineering, and Physical and Mathematical Courses.		Chemical, Biological, and Preparatory Medical Course.	
ntary Physics	3	Elementary Physics	3	Elementary Physics	
Trigonometry	3	Plane Trigonometry	3	Plane Trigonometry	
ric	2	Rhetoric	2	Rhetoric	
h or German	3	French or German	3	French or German	
y of Plants	3	Mechanical Drawing	1	Biology of Plants	
ltural Mechanics	2	Woodworking	3	Elective	
		SPRING TERM.			
ntary Physics	3	Elementary Physics	3	Elementary Physics	
eometry	3	Solid Geometry	3	Solid Geometry	
ic	2	Rhetoric	2	Rhetoric	
or German	3	French or German	3	French or German	
y of Plants	3	Mechanical Drawing	2	Biology of Plants	
lture I: introduction griculture	2	Woodturning and Pattern-making	3	Elective	

A *General Course* will be arranged later.

SOPHOMORE.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Chemistry	4	Chemistry	
Advanced English	2	Advanced English	
German or French	3	German or French	
Plane Surveying	3	Analytical Geometry	
Botany: weeds and fodder plants	3	Mechanical Drawing	
Agriculture II and III: soils, irrigation and drainage	2	Moulding	

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing, 1.

WINTER TERM.

Chemistry	5	Chemistry	
Advanced English	2	Advanced English	
German or French	3	German or French	
Animal Biology	3	Analytical Geometry	
Agriculture IV: agricultural apparatus and constructions	3	Mechanical Drawing	
		Forging	

Electives open to all courses—Photography, 1; Synthetic Geometry, 3.

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Theoretical Chemistry	3	Descriptive Geometry	3
Animal Biology	3	Mechanical Drawing	2
Agriculture V: fertilization	2	Applied Electricity	3
Surveying: leveling and topographical	2	Surveying: leveling and topographical	2

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3; Spherical and Higher Plane Trigonometry, 3.

A *General Course* will be arranged later.

SOPHOMORE.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.		Chemical, Biological, and Preparatory Medical Courses.	
Chemistry	4	Chemistry	4
Advanced English	2	Advanced English	2
German or French	3	German or French	2
Analytical Geometry	4	Biology of Plants	3
Advanced Physics: thermometry, thermodynamics, sound and telephony	3	Elective	6

Electives open to all courses*—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing, 1.

WINTER TERM.

Chemistry	5	Chemistry	5
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Analytical Geometry	4	Animal Biology	3
Advanced Physics: optical phenomena and instruments	3	Elective	3

Electives open to all courses—Photography, 1; Synthetic Geometry, 3.

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Descriptive Geometry	3	Animal Biology	3
Advanced Physics: electricity and magnetism	3	Theoretical Chemistry	3
Theoretical Chemistry	3	Inorganic Preparations	3
Elective	3	Elective	3

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3; Spherical and Higher Plane Trigonometry, 3.

A *General Course* will be arranged later.

* Other electives will be arranged for each course.

JUNIOR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Organic Chemistry	3	General English Literature and History	
General English Literature and History	2	Analytical Chemistry	
Analytical Chemistry	3	Calculus	
Zoölogy	3	Mechanical Drawing	
Horticulture I: field and garden crops	3	Machine Shop	
Volumetric Analysis	3	Elective (Metallurgy, Mechanism).	
Elective	3		
Economic Fungi (required in alternate years).	3		

Electives open to all courses*—Free-hand Drawing, 4: Sketch Class, 1 or 2; Modeling, 2.

WINTER TERM.

Agricultural Course.		Mechanical Course.	
General English Literature and History	2	General English Literature and History	
Comparative Anatomy	2	Calculus	
Agricultural Chemistry	3	Machine Design	
Quantitative Analysis: gravimetric and volumetric	3	Machine Shop	
Horticulture II: market-gardening and greenhouse	3	Thermo-dynamics and Steam-engine	
Elective: III, plant breeding, 1; IV, forestry, 2	3	Elective	

Elective open to all courses—Solid Analytical Geometry, 3.

SPRING TERM.

Agricultural Course.		Mechanical Course.	
General English Literature and History	2	General English Literature and History	2
Comparative Anatomy	2	Calculus	3
Agricultural Chemistry	3	Machine Design	2
Horticulture V: pomology	3	Machine Shop	3
Horticulture VI: ornamental gardening	3	Engineering Laboratory	1
Horticulture VII: floriculture	3	Steam Boilers	2
		Elective (Surveying, Photography, Materials of Construction).	3

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1 or 2; History of Art, 1; Analytical Mechanics, 3.

A *General Course* will be arranged later.

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* Other electives will be arranged for each course.

JUNIOR.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.	**Chemical Course.**	**Biological and Preparatory Medical Course.**
General English Literature and History 2	Organic Chemistry 3	Organic Chemistry 3
Analytical Chemistry 2	General English Literature and History 2	Zoölogy 3
Advanced Physics: electrical measurements and testing of instruments 3	Analytical Chemistry 3	General English Literature and History 2
Calculus 3	Volumetric Analysis 2	Analytical Chemistry 3
Elective 6	Elective 6	Volumetric Analysis 3
		Elective .... 3 (Scientific French or German)

Given in alternate years—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

General English Literature and History 2	Organic Chemistry 3	General English Literature and History 2
Calculus 3	General English Literature and History 2	Comparative Anatomy 2
Advanced Physics: direct current, construction of dynamos and motors, tests of efficiency 3	Sanitary Chemistry 3	Sanitary Chemistry 3
Elective 8	Quantitative Analysis (gravimetric) 3	Quantitative Analysis 3
	Mineralogy and blowpipe 3	Organic Chemistry 3
	Elective 3	Elective .... 3 (Scientific French or German)

Elective open to all courses* Solid Analytical Geometry, 3.

SPRING TERM.

General English Literature and History 2	General English Literature and History 2	General English Literature and History 2
Advanced Physics: alternating current, manipulation of alternators, transformers 3	Organic Chemistry 3	Comparative Anatomy 2
Calculus 3	Industrial Chemistry 3	Comparative Invertebrate Zoölogy 3
Elective 8	Quantitative Analysis (gravimetric) 3	Elective .... 12 (Scientific French or German, 3; Organic Chemistry, 3)
	Elective 3	

A *General Course* will be arranged later.

*Other electives will be arranged for each course.

SENIOR.

FALL TERM.

Agricultural Course.		Mechanical Cours
Veterinary Science	3	Applied Mechanics
Agricultural Chemistry	3	Steam Engine Design
Agriculture VI: Breeds of farm animals	3	Engineering Laboratory
VII: Live stock husbandry	3	Power Transmission
VIII: History of agriculture, (elective)	2	Chemical Engineering
Economic Fungi (required in alternate years.)	3	

Electives open to all courses*—Free-hand Drawing, 4; Argumentation, 2; Adva Literature, 3; Modeling, 2; Sketch Class, 1 or 2; Orations and Essays,

WINTER TERM.

Agricultural Chemistry	3	Applied Mechanics
Agriculture IX: Feeding farm animals	3	Steam Engine Design
X: Dairy husbandry	3	Engineering Laboratory
XI: Poultry farming	2	Wool and Cotton Machinery
XII: Agricultural economics	2	Specifications and contracts
XIII: Agricultural and horticultural literature	2	Inspection excursions.
		Thesis work.

Electives open to all courses*—Solid Analytical Geometry, 3; Advanced Englis 3; Orations and Essays, 1.

SPRING TERM.

Agricultural Chemistry	3	Hydraulics
Economic Entomology	2	Mill and factory designs
Agriculture XIV: Farm management	5	Engineering Laboratory
XV: Farm accounts and records	1	Wool and cotton machinery
XVI: Farm law	1	Specifications and contracts
XVII: Apiculture	1	Inspection excursions.
XVIII: Agricultural debate	2	Thesis work.
XIX: Agricultural experimentation	2	

Electives open to all courses*—Free-hand Drawing, 4; Sketch Class, 1 or 2; Hist Analytical Mechanics, 3; Orations and Essays, 1; Advanced English Literat

A *General Course* will be arranged later.

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*Other electives will be arranged for each course.

SENIOR.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.		Chemical Course.		Biological and Preparatory Medical Course.	
Projective Geometry	3	Organic Chemistry	3	† Bacteriology	3
Advanced Physics: wiring of buildings, switch-boards, systems of regulation, subways	3	Textile Coloring	3	Civil Government	3
Integral Calculus	3	Agricultural Chemistry	3	Scientific French or German	3
Modern Methods in Analytics	3	Gas Analysis	3	Organic Chemistry	3
Heating and Ventilation of Buildings	3	Physiological Chemistry	3	Physiological Chemistry	3
Thesis work.		Thesis work		Elective	3
				† If not taken the previous year.	

*Given in alternate years**—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

Differential Equations	3	Organic Chemistry	3	Psychology	3
Theory of Functions	3	Textile Coloring	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Advanced Physics: photometric and electric tests of lamps, safety and distributing devices	3	Physiological Chemistry	3	Elective	9
Inspection excursions.		Electro-Chemistry	3		
Thesis work.		Thesis work.			

Electives open to all courses—Solid Analytical Geometry, 3; Advanced English Literature, 3; Orations and Essays, 1.

SPRING TERM.

Differential Equations	3	Organic Chemistry	3	Economic Entomology, elective	2
Theory of Functions	3	Textile Fabrics and Machinery, with excursions to manufactories	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Methods of Teaching Mathematics	1	Physiological Chemistry	3	Elective	12
Advanced Physics; traction work and transmission of power	3	Thesis work.		(In Botany and Zoölogy individual arrangements are to be made with heads of departments.)	
Inspection excursions.					
Thesis work.					

A *General Course* will be arranged later.

*Other electives will be arranged for each course.

AGRICULTURE.

COURSE PROPOSED FOR 1898.

I. Introduction.—Definition of terms; origin and necessity of agriculture; relations of agriculture to other industries; agriculture as an occupation; education for agriculture; the atmosphere and sunshine in relation to agriculture; plant and animal life in agriculture. *Spring term, Freshman year; lectures and recitations, 2 exercises per week. Required of Agricultural students.*

II. Soils.—The origin, formation, and deposition of soils are studied under physiography; the composition, mechanical and chemical analysis under agricultural chemistry; the physical properties and relations under soil-physics. Agricultural Soils.—Function; variation; classification; adaptation; location; examination; faults; improvement and preparation; clearing land grading; mixing soils; paring and burning; reclaiming land tillage; irrigation.

III. Land Drainage (Waring).—Sources of water; necessity of drainage; kinds of drains; action of drains; planning system of drainage; drain tiles; construction and care of drains; cost and value of drains; sanitary effects of drainage. *Recitations and practice II. and III. Fall term, Sophomore year; lectures and recitations, 2 exercises per week. Required of Agricultural studen*

IV. Agricultural Apparatus and Constructions.—Farm tool implements; machines and vehicles; farm buildings; fenc roads and bridges—arrangement, construction, care and maint ance. *Winter term, Sophomore pear; lectures, 3 exercises per w Required of Agricultural students.*

V. Fertilization (Storer's Agriculture).—Introduction; cla cation of manures, atmospheric, mineral and organic; man sources of potash, lime, magnesia, soda, iron, phosphates nitrogen salts; stable-manure, composition and manager animal manures; liquid manure; farm sewage; guanos; fish fertilizers; animal refuse; peat; green manuring; sea-weeds; vegetable refuse and by-products; composts; divisors for manures; application and action of manures; valuation of manures. *Spring term, Sophomore year; lectures and text-book, 2 exercises per week. Required of Agricultural students.*

VI. Breeds of Farm Animals.—Origin, history, characteristics and adaptability of the leading breeds of the horse, neat cattle, sheep, swine and poultry; scoring; tracing pedigrees; breeders' associations. *Fall term, Senior year; 3 exercises per week. Elective.*

VII. Live Stock Husbandry.—The principles of breeding; heredity; atavism; correlation; variation; fecundity; in-breeding; cross-breeding; relative influence of parents; sex; pedigree; form; selection; the breeding, care and management of the horse, neat cattle, sheep, swine and poultry. *Fall term, Senior year; 3 exercises per week. Elective.*

VIII. History of Agriculture.—Agriculture in relation to civilization; fisher and hunter-folk; nomads; tillers of the soil; developement of tillage; history of the plow; crop rotation; irrigation; fertilization; general and special farming; agricultural education; agricultural experimentation; evolution of farming implements; the farm and the farmer to-day. *Fall term, Senior year; lectures, 2 exercises per week. Elective by special arrangement with the Professor of Agriculture.*

IX. Feeding of Farm Animals.—Principles of rational feeding; animal body, composition, processes of digestion, assimilation, and excrementation; feeding stuffs, composition and digestibility; nutrients; feeding standards; formulating rations; selection of feeding stuffs; preparation of food; methods of feeding; utility of shelter; special feeding of horse, cow, sheep, swine and poultry, and for work, flesh, milk, wool, eggs, etc. *Winter term, Senior*

X. Dairy Husbandry.—Breeds and breeding of dairy ca barns and dairy buildings; milk production, composition; m agement, aeration, pasteurization, sterilization, testing, prese tion, transportation and marketing; creaming; butter-mak cheese-making; milk-preservation, condensed milk, milk-su etc.; milk-preparation for infants and invalids; dairy bact ology. *Winter term, Senior year; lectures, 3 exercises per w Elective.*

XI. Poultry Farming.—Domestic fowls, kinds, breeds, sel tion and breeding; buildings, location and arrangement, constr tion and furnishing, ventilation, yards and parks; foods and fe ing, care and management, production of eggs and flesh, fatteni dressing and marketing; incubation, natural and artifici brooders; diseases and enemies; caponizing; exhibiting a judging; special management of turkeys, geese, ducks a pigeons. *Winter term, Senior year; lectures, 2 exercises per w Elective.*

XII. Agricultural Economics.—The mutual relations of ag culture and the body politic; the position of agriculture; in pendence of agriculture; State intervention; legislation; ta bounties; taxation; insurance; credit; rewards; census; m and social aspects of agriculture; division and distribution farms; size of farms; extensive and intensive farming; own ship of land; inheritance; nationalization of land; governme lands; colonization; agricultural laborers, machinery, expe mentation; education; association; coöperation; press; agric tural improvement; reclamation and irrigation of land; diversi cation of products; *Winter term, Senior year; lectures, 2 exerci per week. Elective. Open to students who have taken Agricult VIII.*

XIII. Agricultural and horticultural literature.—An opp tunity to read and study in any special line of agriculture or h ticulture for which the student is prepared. Examination a consideration of the reports and bulletins of the agricultural periment stations. *Winter term, Senior year; 2 exercises per week. Elective by special arrangement.*

XIV. Farm Management.—Introductions and definitions; farming requisites; farm production and market relations; capital, permanent, floating and perishable; distribution in land, buildings, apparatus, live stock and supplies; labor and power; machinery; kind of farming; size of farm; sytem of farming; ownership or rental of farm; maintenance and management; returns and results; inventory and balancing of accounts. *Spring term, Senior year; 5 exercises per week. Elective.*

XV. Farm Accounts and Records.—The principles and methods of book-keeping in their application to the keeping of farm accounts; diary; note-book; calendar; records and accounts of special departments, crops, fields and animals; calculations, estimates and valuations; inventories. *Spring term, Senior year; lectures, 1 exercise per week. Elective.*

XVI. Farm Law.—The legal rights and liabilities of farmers; purchase and sale of farm, forms of deeds; rental of farm, terms of lease; boundaries and fences; overhanging trees; water rights and drainage; ways over the farm; rights in the highway; roadsides; live stock; dogs; game; trespass; theft; fires; insurance; employing laborers; liability of employer and employed; contracts; mortgages; notes; taxes; exchange, sale and purchase; contagious diseases of live stock and crops. *Spring term, Senior year; lectures, 1 exercise per week. Elective by special arrangement.*

XVII. Apiculture.—A study of the habits, care, breeding and management of the honey-bee, with practical work in the apiary. *Spring term, Senior year; lectures, 1 exercise per week. Elective.*

XVIII. Agricultural Debate.—Discussion in the form of regular parliamentary debates upon leading agricultural questions. *Spring term, Senior year; 1 exercise per week. Elective.*

XIX. Agricultural Experimentation.—A study of the objects, principles and methods of agricultural experimentation. Opportunity will be given for practical participation in the work of the Experiment Station to those students who arrange to continue this work through the experimental season. *Spring term, Senior year; lectures and object lessons, 2 exercises per week. Elective by special arrangement.*

HORTICULTURE.

I. Field and Garden Crops.—Balancing of farm; rotation of crops; grass-land; wood-land; tillage-land; preparation of land, planting, cultivating, harvesting, storing and disposal of crops; special consideration of the hay crop, fodder crops, Indian corn, potatoes, root crops, field and garden vegetables; weeds. *Fall term, Junior year; lectures, 3 exercises per week. Required of Agricultural students.*

II. Market-gardening and Greenhouse Culture.—Location, soil, preparation and equipment; construction, maintenance and management of hot-beds, cold frames, forcing pits and green-houses; market-garden and greenhouse crops. *Winter term, Junior year; lectures and reference books, 3 exercises per week. Required of Agricultural students.*

III. Plant Breeding.—Propagation of plants; seed-growing; heredity; individuality; characteristics; variation; origin and improvement of varieties; selection; culture; close breeding; cross-breeding; pollination natural and artificial; special breeding of potato, maize, beet, cucumber, squash, strawberry, raspberry, etc. *Winter term, Junior year; lectures, 1 exercise per week. Elective.*

IV. Forestry.—Relation to climate, shelter, water-shed and timber production; trees as a farm crop; nut-bearing trees; planting, care and management of forest trees; cutting and curing; wind-breaks, groves and shelter belts; forest fires; diseases and enemies of forest trees; arbor day. *Winter term, Junior year; lectures, 2 exercises per week. Elective.*

V. Pomology (Maynard).—Culture of orchard, vineyard and garden fruits; special culture of the apple, pear, peach, plum, cherry, quince, grape, currant, gooseberry, raspberry, blackberry and strawberry; harvesting, preparation, preservation and marketing of fruit; evaporators; cold storage; special study of propagation of fruits, grafting, budding, layering, etc.; spraying. *Spring term, Junior year; lectures and text-book, 3 exercises per week. Required of Agricultural students.*

VI. Ornamental Gardening (Long).—Requirements of ornamental gardening; materials; arrangement; construction and maintenance of ornamental gardens; improving the surroundings of rural homes; the planting of trees and shrubbery; lawns; village improvement. *Spring term, Junior year; lectures and text-book, 3 exercises per week, for one half term. Required of Agricultural students.*

VII. Floriculture.—House plants, selection, care and arrangement; conservatories; commercial floriculture; garden, field and greenhouse culture of flowering plants; bulb culture. *Spring term, Junior year; lectures and text-book, 3 exercises per week, for*

AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the state who can attend the College as students, the faculty has arrange course of study, known as the Agricultural College Exte sion. The plan, which is similar to that of the Chautauqua Rea ing Circle, provides a course of study embodying lines in agr culture and horticulture as well as studies in literature and t sciences.

The course of study is designed to meet the requirements anyone who may choose to pursue it. To complete the course, satisfactory examination on at least one book under each numbe of the three years' course, given below, must be passed.

Candidates upon completing the course will receive the awa of a diploma.

COURSE OF STUDY.

FIRST YEAR.

		Publisher's Price.	Price to Members of the Extension.
1.	First Principles of Agriculture. *Voorhees.*	$ 72	$ 72
	American Literature. *Hawthorne and Lemmon*		1 12
2.	*Home Floriculture. *Rexford*	1 50	1 20
	Silos, Ensilage, and Silage. *Miles*	50	38
	*Helps for Home Makers *Mary Blake*	75	56
3.	Insects and Insecticides. *Weed*	1 25	1 00
	The Human Body (Briefer Course). *Martin*		1 20
4	Feeding Animals. *Stewart.*	2 00	1 60
	American History. *Montgomery*		1 00
5.	Manual of the Constitution. *Andrews*		1 00

SECOND YEAR.

	Publisher's Price.	Price to Members of the Extension.	Postage.
Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$ 06
Representative English Literature. *Pancoast*		1 60	12
Text-Book of Botany			
Horses, Cattle, Sheep and Swine. *Curtis*	2 00	1 60	12
*Ornamental Gardening for Americans. *Long*	2 00	1 50	08
How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
How to Make the Garden Pay. *Greiner*	2 00	1 60	12
Profitable Poultry Keeping. *Beale*	1 50	1 12	08
*Anna Maria's Housekeeping. *Power*	75	56	08
Stock Breeding. *Miles*	1 50	1 12	12
English History. *Montgomery*		1 12	11
Political Economy (Briefer Course). *Walker*		1 00	08
Astronomy. *Newcomb*		1 30	12

THIRD YEAR.

Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$ 06
General History. *Myers*		1 50	15
A Text-Book of Chemistry			
The Nursery Book. *Bailey*	1 00	80	06
Draining for Profit and Health. *Waring*	1 50	1 12	08
Langstroth on the Hive and Honey Bee. (Dadant's Revision)		1 12	08
American Fruit Culturist. *Thomas*	2 50	2 00	22
American Dairying. *Gurler*	1 00	80	06
Green-House Construction. *Taft*	1 50	1 20	08
Horse Breeding *Sanders*	2 00	1 50	12
*Our Farming. *Terry*	2 00	1 60	13
English translations from a foreign literature. (Books will be recommended later according to the subject chosen.)			
*The New Womanhood. *Fernald*	1 25	94	08
Advanced Course in Political Economy. *Walker*		2 00	15
Soils and Rocks. *Stockbridge*	2 50	2 25	12

SUPPLEMENTARY READING.

Below is a list of books which the faculty recommends as reading supplementary to the above course; the same is suggested as a desirable list of books for the home, grange or town library.

	Publisher's Price.	Price to Members.	Postage
Agriculture (3 vols.) *Storer*	$5 00	$5 00	$ 36
Talks on Manures. *Harris*	1 75	1 31	08
Practical Dairy Husbandry. *Willard*	3 00	2 00	16
The Grasses of North America. (Vol. I.) *Beal*	2 50	2 25	10
" " " (Vol. II.) *Beal*	5 00	4 50	29
Turkeys and how to Raise Them. *Myrick*	1 00	75	07
The Spraying of Plants. *Lodeman*	1 00	80	07
Plant Breeding, *Bailey*	1 00	80	07
Soils. *King*	75	60	05
Manures, How to Make and How to Use Them. *Burpee.*	50	38	08
The Earth and its Story. *Heilprin*	1 00	1 00	08
Fungi and Fungicides. *Weed*	1 00	75	07
Survival of Unlike. *Bailey*	2 00	1 60	10
Horticultural Rule Book. *Bailey*	75	60	06
Rural Grape Training. *Bailey*	75	65	04
Vegetable Gardening. *Greene*			
The Farmer's Veterinary Adviser. *Law*	3 00	2 40	16
Plant Life on the Farm. *Masters*	1 00	75	06
The Shepherd's Manual. *Stewart*	1 50	1 12	11
Harris on the Pig. *Harris*	1 50	1 12	08
Practical Poultry Keeping. *Wright*	2 00	1 50	12
The Book of Poultry. *Wright.*	5 00	3 75	24
Colored Plates.	12 50	9 38	32
How Crops Feed. *Johnson*	1 50	1 12	11
How Crops Grow. *Johnson*	1 50	1 12	11
A B C of Bee Culture. *Root*	1 25	1 00	13
A Modern Bee Farm. *Simmins*			
Bees and Bee-Keeping. (2 vols.) *Cheshire*			
The Production of Comb Honey. *Hutchinson*		25	
The Production of Extracted Honey. *Cowan*			
The Incubator and its use. *Rankin*			
Poultry for Profit. *Jacobs*			

	Publisher's Price.	Price to Members.	Postage.
s and Brooders. *Jacobs*			
nd Artificial Duck Raising. *Rankin*			
(A Treatise on raising Broilers and Ducks tificial Means.) *McFetridge*			
k of Plants. *Henderson*	$4 00	3 20	28
Fruits, and Leaves. *Sir John Lubbock*			
now the Wild Flowers. *Dana*		1 50	Free
Species. *Darwin*	2 00	1 50	14
and Plants under Domestication. (2 vols.) *in*	5 00	3 75	28
ican Commonwealth. *Bryce*		3 50	Free
a Daughter. *Starrett*	75	60	06
Other Half Lives. *Riis*		1 25	06
of Home	60	45	05
in. *Frances E. Willard*	1 00	75	07
land Legends and Folk Lore. *Drake*	2 00	1 50	12
ss Nobleman. *Jane Austin*	1 25	94	08
ron and his Daughter. *Jane Austin*	1 25	94	08
f Standish. *Jane Austin*	1 25	94	08
len. *Jane Austin*	1 25	94	08
rs with American History. (2 vols.) *Morris*	3 00	2 25	24
ces of American Literature		1 00	08
Literature Series		15	Free
istory of the English People. *Green*		1 20	15
History of England. *Gardiner*		3 00	15
from English History. *J. R. Green*	1 50	1 12	12
lassic Series		12	Free
inion (Periodical)			

f the above books may be bought of The Rhode Island ompany, 113 and 115 Westminster Street, Providence, by s of the Extension Course, at the special price given.

er information regarding the course may be obtained by ng Part I. of the 1896 report or by writing to the address

J. D. TOWAR,
Sec. Agr. College Extension,
Kingston, R. I.

MILITARY ORGANIZATION.

COMMANDANT,

W. W. Wotherspoon, Captain Twelfth Infantry, U. S. A.

COMPANY A.

H. E. B. Case, Captain.

W. C. P. Merrill	First Lieutenant
W. J. Taylor	First Sergeant.
W. F. Harley	Sergeant.
H. P. Wilson	Sergeant.
A. P. Kenyon	Sergeant.
A. F. Grinnell	Sergeant.
S. W. Wright	Corporal.
G. Rose	Corporal.
H. A. Congdon	Corporal.
B. E. Kenyon	Corporal.

COMPANY B.

L. H. Marsland, Captain.

A. A. Tucker	Second Lieuten
W. C. Clarke, Jr.	First Sergeant.
R. B. Strout	Sergeant.
I. Thomas	Sergeant.
M. A. Ladd	Sergeant.
W. S. Carmichael	Sergeant.
E. A. Bates	Corporal.
C. F. Kenyon	Corporal.
W. L. W. Clarke	Corporal.
F. R. Eddy	Corporal.

Battalion Adjutant	Lieut. A. A. Tuc
Bugler	H. W. Case.

BOTANICAL CLUB.

In Charge of the Professor of Botany.

Those interested in botanical subjects meet occasionally to dis- iss simple botanical literature, especially the bulletins of the xperiment Stations and of the U. S. Government.

ZOÖLOGICAL CLUB.

The Zoölogical Club meets bi-weekly for the study of the local na, for the presentation of brief papers, and for the review of rent journals. A special room is devoted to the collections l preparations made by the club. The daily observations by members upon the occurrence, habitat, structure, life history l habits of the animals, are on file for ready reference. Special ursions are made to favorable localities. Opportunities for d work in zoölogy are remarkably fine.

OFFICERS.

NRY F. O'NEIL	President.
RRIETTE F. TURNER	Vice President.
RRY KNOWLES	Secretary.
PAYNE	Curator.

CHEMICAL CLUB.

The Chemical Club meets once in two weeks for the purpose discussing the literature upon chemical, physical, and agricultur subjects. The French, German, and English journals are distri uted among the members and reports are received from time time on subject matter from thirty-five different journals.

OFFICERS.

Charles F. Kenyon	President.
Harry W. Arnold	Vice President.
William J. Taylor	Secretary.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

M. A. Ladd	President.
W. F. Harley	Vice President.
W. E. Drake	Cor. Secretary.
W. P. Alexander	Rec. Secretary.
E. A. Bates	Treasurer.

ALUMNI ASSOCIATION.

George M. Tucker, President.

George A. Rodman, Secretary,
Woonsocket, R. I.

Charles L. Sargent, Treasurer,
Peacedale, R. I.

Adams, George Edward	Rocky Brook,	R. I.
Burdick, Howland	Newport,	"
Clarke, Charles Sherman	Jamestown,	"
Eldred, Mabel DeWitt	Kingston,	"
Greenman, Adelaide Maria	Kingston,	"
Knowles, John Franklin	Kingston,	"
Madison, Warren Brown	East Greenwich,	"
Scott, Arthur Curtis	Summit,	"
Tucker, George Mason	Swansea Centre,	Mass.

GRADUATES OF 1896.

Brown, May	Narragansett Pier,	R. I.
Greenman, Adelaide Maria	Kingston,	"
Kenyon, Albert Lewis, Mech	Point Judith,	"
Moore, Nathan Lewis Cass, Agr	Shannock,	"
Tabor, Edgar Francis, Mech	Slatersville,	"
Williams, James Emerson, Agr	Summit,	"

SENIORS.

Carmichael, Welcome Sands, Sci	Shannock,	R. I.
Case, Herbert Edwards Brown, Mech	Pawtucket,	"
Grinnell, Archie Franklin, Mech	Middletown,	"
Hanson, Gertrude Maie, Sci	Peace Dale,	"
Hoxsie, Bessie Bailey, Sci	Quonochontaug,	"

Larkin, Jessie Louise, Sci	Westerly,	R. I.
Kenyon, Charles Franklin, Mech	Shannock,	"
Kenyon, Albert Prentice, Mech	Ashaway,	"
Marsland, Louis Herbert, Mech	Franklin,	N. Y.
Tefft, Eliza Alice, Sci	Allenton,	R. I.
Thomas, Irving, Mech	Lafayette,	"

JUNIORS.

Arnold, Sarah Estelle, Sci	Wakefield,	R. I.
Barber, George Washington, Agr	Shannock,	"
Case, John P., Agr	Gould,	"
Clarke, William Case, Sci	Wakefield,	"
Clarke, William Lamont Wheeler, Mech	Jamestown,	"
Congdon, Henry Augustus, Mech	Kingston,	"
Cargill, Edna Maria, Sci	Abbott Run,	"
Flagg, Martha Rebecca, Sci	Kingston,	"
Harley, William Ferguson, Agr	Pawtucket,	"
Rose, George Tucker, Agr	Kingston,	"
Strout, Robert Bruce, Agr	Wakefield,	"
Taylor, William James, Sci	Mendon,	Mass.
Tucker, Attmore Arnold, Agr	Wakefield,	R. I.
Wilson, Grace Ellen, Sci	Allenton,	"
Wright, Silas Wilber, Agr	Wakefield,	"

SOPHOMORES.

Allen, Nathaniel Bertram, Agr	Pawtuxet,	R. I.
Arnold, Henry Francis Walling, Mech	Woonsocket,	"
Arnold, Everett Mullen, Sci	Wood River Junc.,	"
Bacheller, William Stanhope, Mech	Newport,	"
Barber, Arthur Sisson	Hope Valley,	"
Brightman, Henry Mason, Mech	White Rock,	"
Cargill, James Edward, Mech	Abbott Run,	"
Cumming, John Stuart, Mech	Pawtucket,	"
Doughty, Robert Stanley, Mech	Providence,	"

rman James	Adamsville,	R. I.
Mildred Wayne, Sci	Allenton,	“
Blydon Ellery, Agr	Wood River Junc.,	“
Carroll, Mech	Kingston,	“
Harry, Agr	Point Judith,	“
errill Augustus, Mech	Bay Shore, Long Island,	N.Y.
Villiam Frazier, Mech	Cannonsville,	“
Walter T	Adamsville,	R. I.
benezer, Sci	Lyons Farms,	N. J.
Walter Clark, Mech	Lafayette,	R. I.
ellie Hollis, Sci	Malden,	Mass.
, Robert Spink, Mech	Wickford,	R. I.
nnie Elizabeth, Sci	Wickford,	“
, George Albert, Mech	West Kingston,	“

FRESHMEN.

ohn Raleigh	Kingston,	R. I.
n James	East Greenwich,	“
arah Lila	Kenyon,	“
uth Hortense	Kenyon,	“
arles Andrew	Providence,	“
Amos Langworthy	Wood River Junc.,	“
, Alston Windfield	Point Judith,	“
, Leroy Weston	Point Judith,	“
r, Elisha Frederic	Peace Dale,	“
rthur Earle	Quonochontaug,	“
, Abby Fidelia	Wickford,	“
Alfred, Jr	Newburyport,	Mass.
, Oscar Dean	Wickford,	R. I.
, Robert Joseph	Usquepaug,	“
orden Lawton	South Portsmouth,	“
eorge Canning, Jr	Wickford,	“
alph Nelson	Wickford,	“
nthony Enoch	Chepachet,	“

Tucker, Bertha Douglas	Swansea Centre,	Mass.
Wells, Herbert Comstock	Kingston,	R. I.
Wightman, Levi Eugene,	South Scituate,	“
Whitman, Chester Wilson	Arctic,	“
Wilson, James Robert	Belleville,	“

SPECIALS.

Angell, Ralph Day	Providence,	R. I.
Baldwin, Margaret	Aspen Wall,	Va.
Barton, Benjamin	East Greenwich,	R. I.
Batchelder, Nelson A	Crompton,	“
Bates, Edward Ayer	Pawtucket,	“
Bosworth, Alfred Wilson	Boston,	Mass.
Brayton, Charles Andrew	Fiskeville,	R. I.
Carpenter, Benjamin	Perryville,	“
Case, Harold Warren	Pawtucket,	“
Clarke, John Gideon	West Kingston,	“
Clarke, William Hazard	West Kingston,	“
Clarke, Latham	West Kingston,	“
Conant, Walter Aiken	Wellesley Hills,	Mass.
Cross, Morton Robinson	Wakefield,	R. I.
Cullen, Edmund Daniel	East Greenwich,	“
Eddy, Frank Roffee	Providence,	“
Emmet, James R.	Peace Dale,	“
Fiske, Nina Viola	Providence,	“
Fison, Gertrude Sarah	Peace Dale,	“
Greene, Prescott Morrill	Peace Dale,	“
Hammond, Thomas Cook	Newport,	“
Merrill, William Chauncy Palmer	Central Falls,	“
Minor, George Eldred	Westerly,	“
Morrison, Clifford Brewster	Pawtucket,	“
Nash, Clarence Earl	Watch Hill,	“
O'Neil, Henry Francis	Providence,	“

Parkhurst, Elizabeth M.	Wickford,	R. I.
Peckham, Herbert James	Middletown,	"
Peckham, Arthur Noyes	Kingston,	"
Reynolds, Rebecca Dean	East Greenwich,	"
Rose, John E.	Kingston,	"
Sherman, Abbie Gertrude	Kingston,	"
Sisson, Marion Sumner	South Portsmouth,	"
Steere, John Purkis	Chepachet,	"
Steere, Enoch Mowry	Chepachet,	"
Steere, Rœna Hoxsie	Wood River Junc.,	"
Thompson, Sally Rodman	Wakefield,	"
Turner, Harriette Florence	Ontario Centre,	N. Y.
Wells, Grace Perry	Kingston,	R. I.
Wilson, Harry Page	Allenton,	"
Woodmansee, Mattie Florence	Shannock,	"

SPECIALS IN WOOD-CARVING.

Mrs. Charles Auel	Shannock,	R. I.
Mrs. Charles Armstrong	Wakefield,	"
Mrs. Ellen Bosworth	Kingston,	"
Miss Mary J. Brown	Kingston,	"
Mrs. George Carmichael	Shannock,	"
Mrs. George Clark	Shannock,	"
Miss Julia Clarke	Shannock,	"
Mrs. Oscar E. Earnshaw	Kenyon,	"
Mrs. A. A. Greenman	Kingston,	"
Mrs. F. D. Johnson	Wakefield,	"
Miss Mary E. Kenyon	Kingston,	"
Mrs. George Krœner	Wakefield,	"
Miss May J. Lanphear	Peace Dale,	"
Mrs. Carrie Palmer	Wakefield,	"
Miss A. E. Rodman	Peace Dale,	"
Miss Mary E. Wright	Shannock,	"

Post Graduates	9
Graduates of 1896	6
Seniors	11
Juniors	15
Sophomores	23
Freshmen	24
Specials	41
Specials in Wood-carving	16
Total, counting none twice	145
Students in College Extension courses	32

TREASURER'S REPORT.

ELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

896.	DR.	
1. 1.	To cash balance on hand.	$4 27
	Interest from 1862 fund	1,918 89
	J. H. Washburn, President, for students' board, etc.	11,606 00
	Incidental credits, cash	681 63
	Cash received from interest	8 13
		$14,218 92

1896.	CR.	
	By salaries	$2,256 24
	Postage, stationery and printing	61 74
	Freight and expressage	495 14
	Traveling	54 23
	Labor	2,709 85
	Store	1,703 72
	Furniture	343 24
	Incidentals	2,650 21
	Construction and repairs	1,296 01
	Provisions	1,876 03
	Boarding expenses	643 31
	Cash on hand	129 20
		$14,218 92

THIS IS TO CERTIFY that the undersigned, Auditing Committee of t of Managers of the Rhode Island College of Agriculture and Mecha have examined the accounts of Melville Bull, Treasurer, as above, and same to be correct, leaving a balance in the said Treasurer's hands of dred and twenty-nine dollars and twenty cents.

GARDINER C. SIMS,
HENRY L. GREENE,
CHAS. J. GREENE,
Auditing Com

THE RHODE ISLAND AGRICULTURAL EXPERIMENT STATION *in account*
UNITED STATES' APPROPRIATION.

1896.	DR.		
	To receipts from the Treasurer of the United States as per appropriation for the year ending June 30, 1896, under act of Congress approved March 2, 1887		$1
1896.	CR.		
June 30.	By Salaries	$8.469 27	
	Labor	1,713 68	
	Publications	1,969 34	
	Postage and stationery	104 42	
	Freight and expressage	118 78	
	Heat, light, and water	99 18	
	Chemical supplies	38 88	
	Seeds, plants, and sundry supplies	548 56	
	Fertilizers	353 26	
	Feeding stuffs	26 34	
	Library	285 70	
	Tools, implements, and machinery	242 91	
	Furniture and fixtures	85 52	
	Scientific apparatus	7 25	
	Live stock	363 00	
	Traveling	334 56	
	Contingent expenses	25 79	
	Building and repairs	213 56	
			$1

WE, the undersigned, duly appointed Auditors of the Corporation, do hereby certify that we have examined the books and accounts of the Rhode Island Experiment Station for the fiscal year ending June 30th, 1896; that we have found the same well kept and classified as above and that the receipts for the year from the Treasurer of the United States are shown to have been fifteen thousand dollars, and the corresponding disbursements fifteen thousand dollars; for all of which proper vouchers are on file and have been by us examined and found correct.

And we further certify that the expenditures have been solely for the purpose set forth in the act of Congress approved March 2, 1887.

Signed,

GARDINER C. SIMS,
HENRY L. GREENE,
CHAS. J. GREENE,
Auditors.

PROVIDENCE, R. I., July 15, 1896.

I hereby certify that the above is a true copy from the books of account of the institution named.

MELVILLE BULL,
Treasurer of the Rhode College of Agriculture and Mechanic Arts.

I hereby certify that the above signature is that of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

1896.	DR.	
June 30.	To balance from last year	$1,021 63
	Station receipts	1,296 04
	Station receipts, fertilizer inspection	2,676 84
	Interest	73 17
		$5,067 68

1896	Cr.		
	By Salaries	$402	30
	Labor	846	13
	Supplies and repairs	865	49
	Freight and expressage, postage and stationery	75	70
	Library and printing	272	46
	Tools and machinery	19	72
	Scientific instruments	150	43
	Chemical apparatus and supplies	31	66
	Furniture and general fittings	87	68
	Roads, water supply, and drainage	13	93
	Live stock	142	88
	Traveling	65	21
	Incidentals	37	60
	Buildings	63	02
	Fertilizer control	839	27
	Balance on hand	1,154	20
		$5,067	68

MELVILLE BULL, *Treasurer, in account with* UNITED STATES' SPECIAL APPROPRIATION.

1896.	Dr.		
June 30.	To balance on hand	$1,274	50
	Interest	51	46
		$1,325	96
	Cr.		
	By Library	$169	56
	Scientific apparatus	63	06
	Balance unexpended	1,093	34
		$1,325	96

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, ending June 30, 1896, and the vouchers corresponding therewith and find the same to be correct.

GARDINER C. SIMS,
HENRY L. GREENE,
CHAS. J. GREENE,
Auditors.

Synopsis of the Report of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts to the Secretary of Agriculture and the Secretary of the Interior, of amount received under Act of Congress of August 30, 1890, in aid of Colleges of Agriculture and the Mechanic Arts, and of the disbursements thereof, to and including June 30, 1896.

Balance on hand July 1, 1895	$40,670 42
Installment for 1895-'96, reeeived July 10, 1895	21,000 00
Total available for year ending June 30, 1896	$61,670 42

DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE 30, 1896.

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction	$6,024 11	
SCHEDULE B.—Disbursements for Instruction in Mechanic Arts and for facilities for such instruction	8,757 21	
SCHEDULE C.—Disbursments for Instruction in English Language and for facilities for such instruction	2,372 73	
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction	1,452 47	
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction	10,169 93	
SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction	666 68	
Total expended during the year		$29,443 13
Balance remaining unexpended		32,227 29
		$61,670 42

I HEREBY CERTIFY that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named; and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the Eng language, and the various branches of mathematical, physical, natural, economic science, with special reference to their applications in the indust of life, and to the facilities for such instruction.

MELVILLE BULL, *Treasur*

INVENTORY OF THE PROPERTY OF THE RHODE ISLAND COLLEGE OF AGRIC TURE AND MECHANIC ARTS.

Property of the Department of Agriculture and Horticulture	$9,360
Property of the Department of Mechanic Arts	13,689
Property of the Department of English and History	4,884
Property of the Department of Mathematics	1,579
Property of the Department of Natural Sciences	17,286
Property of the Department of Political Science	248
Property of the Boarding Department	2,205
Property of the Women's Dormitory	1,100
Guns, cannon, and other military equipment	4,641
Furniture in offices and schoolrooms	1,216
Scientific apparatus, tools, and machinery of the Experiment Station.	4,882
Books of the Experiment Station	2,871
Other property of the Experiment Station	5,471
Amount of personal property	$69,336
Women's Dormitory	$2,500
Hothouse	200
Mechanical Building	10,000
Blacksmith Shop	400
Temporary wooden buildings	4,000
Boarding Hall	10,000
Dormitory	45,000
Water Supply	10,000
Experiment Station Laboratory	20,000
Barns	5,000
Farm, roads, and improvements	15,000
Amount of real estate	$122,100
Total amount of real estate and personal property	$191,436

GENERAL VIEW.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX
TILDEN FOUNDATIONS

llege of Agriculture
and
Mechanic Arts.

Kingston, R. I.

1893.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX
TILDEN FOUNDATIONS

TENTH ANNUAL REPORT

of the

Corporation, Board of Managers,

of the

R. I. COLLEGE OF AGRICULTURE

AND

MECHANIC ARTS,

made to the

General Assembly, at its January Session, 1898.

18-17 *PART I.*

Part II, Experiment Station Report, is printed under separate cover.

PROVIDENCE, R. I.
E. L. FREEMAN & SONS, STATE PRINTERS

TENTH ANNUAL REPORT

of the

Corporation, Board of Managers,

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R. I. COLLEGE OF AGRICULTURE

AND

MECHANIC ARTS,

made to the

General Assembly, at its January Session, 1898.

1897 *PART I.*

Part II, Experiment Station Report, is printed under separate cover.

PROVIDENCE, R. I.
E. L. FREEMAN & SONS, STATE PRINTERS.
1898.

Rhode Island College of Agriculture and Mechanic Arts.

CORPORATION.

Hon. MELVILLE BULL	Newport County.
Hon. C. H. COGGESHALL	Bristol County.
Hon. HENRY L. GREENE	Kent County.
Hon. GARDINER C. SIMS	Providence County.
Hon. J. V. B. WATSON	Washington County.

OFFICERS OF THE CORPORATION.

Hon. C. H. COGGESHALL, President	P. O., Bristol, R. I.
Hon. HENRY L. GREENE, Vice President	P. O., Riverpoint, R. I.
Hon. GARDINER C. SIMS, Clerk	P. O., Providence, R. I.
Hon. MELVILLE BULL, Treasurer	P. O., Newport, R. I.

REPORT.

To His Excellency Elisha Dyer, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1898:

I have the honor to submit herewith the Tenth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

CHANDLER H. COGGESHALL,

President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

FACULTY AND ASSISTANTS.

JOHN HOSEA WASHBURN, Ph. D.,

PRESIDENT,

Professor of Agricultural Chemistry,

B. S., Massachusetts Agricultural College, 1878; Graduate student, Brown University, 1880; Graduate student, Massachusetts Agricultural College, 1881-1883; Professor of Chemistry, Storrs Agricultural School, 1883-1887; Student in Göttingen University, 1885 and 1887-1889; **Ph. D.**, Göttingen, 1889; Appointed President, 1890.

HOMER JAY WHEELER, Ph. D.,

Professor of Geology,

B. S., Massachusetts Agricultural College, 1883; Assistant Chemist, Massachusetts State Experiment Station, 1883-1887; Graduate student, University of Göttingen, 1887-1889; Ph. D., Göttingen, 1889; Appointed Chemist of R. I. Agricultural Experiment Station and Professor of Geology, 1890.

ANNE LUCY BOSWORTH, B. S.,

Professor of Mathematics,

B. S., Wellesley College, 1890; First Assistant, Amesbury (Mass.) High School, 1890-1892; Appointed Professor of Mathematics, April, 1892; Graduate student at the University of Chicago, summer of 1894 and 1896.

E. JOSEPHINE WATSON, A. M.,

Professor of Languages,

A. B., Smith College, 1882; A. M., The Cornell University, 1883; Assistant in English, Smith College, 1883-1887; Student of North European Languages in Göttingen, 1887-1889; Appointed Professor of Languages, September, 1892; Student of French in Tours, summer of 1895.

WILLIAM ELISHA DRAKE, B. S.,

Professor of Mechanical Engineering,

[illegible] S., Polytechnic Institute, Worcester, 1886; Instructor in Physics and Electricity, Worces- [illegible]ytechnic Institute, 1887; Instructor in Woodworking at Pratt Institute, Brooklyn, 1893; Appointed Professor of Mechanical Engineering, 1893.

OLIVER CHASE WIGGIN, M. D.,

Professor of Comparative Anatomy and Physiology,

M. D., Harvard University, 1866; Practicing physician in Providence, 1866-1886; Visiting physician to R. I. Hospital, 1872-1882; Consulting physician to Dexter Asylum, 1875-1885; President Providence Medical Association, 1880-1882; President Rhode Island Medical Society, 1884-1886; Founder of the Providence Lying-in Hospital, and President 1884-1891; Appointed Professor of Comparative Anatomy and Physiology, 1893.

WILLIAM WALLACE WOTHERSPOON,

Captain, 12th Infantry, U. S. A.,

Professor of Military Science and Tactics,

Appointed 2nd Lieutenant, 12th Infantry, October 1, 1873; Promoted 1st Lieutenant, March 20, 1879; Promoted Captain 12th Infantry, April 28, 1893; Appointed Professor of Military Science and Tactics, November, 1894.

HARRIET LATHROP MERROW, A. M.,

Professor of Botany,

B. S., Wellesley College, 1886; Teacher of Science, Plymouth (Mass.) High School, 1887-1888; Teacher of Science, Harcourt Place, Gambler, O., 1888-1891; Graduate student, University of Michigan, 1891 1892; A. M., Wellesley College, 1893; Graduate assistant, Botanical Laboratory, University of Michigan, 1893 1894; Appointed Professor of Botany, January, 1895.

ARTHUR AMBER BRIGHAM, PH. D.,

Professor of Agriculture.

B. S., Massachusetts Agricultural College, 1878; Engaged in practical farming, 1878-1889; Professor of Agriculture in the Imperial Agricultural College at Sapporo, Japan, 1889-1893; Graduate student at Göttingen University, 1893 1896; Ph. D, Göttingen, 1896; Appointed Professor of Agriculture, 1896.

GEORGE WILTON FIELD, PH. D.,

Professor of Zoölogy,

A. B., Brown University, 1887, and A. M., 1890; Ph. D., Johns Hopkins University, 1892; Assistant in Biology, Johns Hopkins University, 1891-1892; Occupant of Smithsonian Table at Naples Zoölogical Station, 1892 1893; Student at University of Munich, 1893; Associate Professor of Cellular Biology, Brown University, 1893-1896; Appointed Professor of Zoölogy, 1896.

FRED WALLACE CARD, M. S.,

Professor of Horticulture,

B. S., Cornell University, 1892; M. S., Cornell University, 1895; Assistant Horticulturist, Cornell University Experiment Station, 1893; Associate Professor of Horticulture, University of Nebraska, 1893 1898; Appointed Professor of Horticulture, 1898.

JAMES DE LOSS TOWAR, B. S.,

Assistant Professor of Agriculture and in Charge of Civil Engineering,

B. S., Michigan Agricultural College, 1885; Graduate student at Michigan Agricultural College, 1890-1891; Assistant Agriculturist, R. I. Experiment Station, 1891-1891; Appointed Assistant Professor of Agriculture, R. I. College of Agriculture and Mechanic Arts, 1893; Appointed in Charge of Civil Engineering, 1895.

JOHN EMERY BUCHER, A. C., PH. D.,

Associate Professor of Chemistry,

State Normal School, Millersville, Pa., 1887-1888; A. C. Lehigh University, 1891; Ph. D., Johns Hopkins University, 1894; Instructor in Organic Chemistry, Tufts College, 1894-1897; Appointed Associate Professor of Chemistry, 1897.

ARTHUR CURTIS SCOTT, B. S.,

Assistant Professor of Physics,

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Harvard University, summer course in Physics, 1895; Appointed Instructor in Physics, 1895; Student at The Cornell University, summer course in Physics, 1896; Student at Massachusetts Institute of Technology, summer course in Physics, 1897; Student at Harvard University, summer course in Geology, 1897; Appointed Assistant Professor of Physics, 1897.

MABEL DEWITT ELDRED, B. S.,

Instructor in Drawing,

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Chase Art School, winter of 1897-1898; Appointed Instructor in Drawing, 1897.

MARY WATKINSON ROCKWELL, B. L.,

Instructor in Languages,

Student at Göttingen, 1887-1889; Graduate, Norwich Free Academy, 1892; Student in France, 1892-1893; B. L., Smith College, 1897; Appointed Instructor in Languages, 1897.

LUCY HARRIET PUTNAM,

Instructor in Expression,

Graduate of School of Expression, Boston, Mass., 1896; Instructor at summer session of School of Expression, Plymouth, Mass., 1896; Appointed Instructor in Expression, 1896.

HELEN ELIZABETH BROOKS,

Instructor in Stenography and Typewriting,

Student in Chandler's Normal Shorthand School, 1894; Graduate of Boston Normal School of Gymnastics, 1897; Appointed Instructor in Stenography and Typewriting, 1898.

GRADUATE ASSISTANTS.

CHARLES SHERMAN CLARKE, B. S.,

Assistant in Mechanics.

JOHN FRANKLIN KNOWLES, B. S.,

Assistant in Woodwork.

HOWLAND BURDICK, B. S.,

Assistant in Agriculture.

CHARLES FRANKLIN KENYON, B. S.,

Assistant in Chemistry.

LOUIS HERBERT MARSLAND, B. S.,

Assistant in Mathematics.

GEORGE BURLEIGH KNIGHT.

Assistant in Ironwork.

NATHANIEL HELME.

Meteorologist.

COLLEGE CALENDAR.

1898.

WINTER TERM.

January 3, 1 P. M	Term begins.
January 27	Day of Prayer for Colleges.
February 22	Washington's Birthday.
March 25	Term ends.

SPRING TERM.

April 4	Term begins.
——— ———	Arbor Day.
May 30	Memorial Day.
June 6	Senior Examinations begin.
June 12	Baccalaureate Sunday.
June 14	Commencement.
June 18, 10 A. M	Entrance Examinations.

FALL TERM.

September 1, 2, 10 A. M	Entrance Examinations.
September 19, 20, 10 A. M	Examination of Conditioned Students.
September 19, 20, 10 A. M	Entrance Examinations.
September 21, 1 P. M	Term begins.
——— ——— ———	Thanksgiving Day.
December 22	Terms ends.

1899.

WINTER TERM.

January 2.	Examination of Conditioned Students.
January 3, 1 P. M	Term begins.
March 24	Term ends.

SPRING TERM.

April 3	Examination of Conditioned Students.
April 4, 1 P. M	Term begins.
June 11	Baccalaureate Sunday.
June 13	Term ends.

EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D.,	President of the College and *Director *Pro tem.*
†CHARLES O. FLAGG, B. S	Director and Agriculturist.
H. J. WHEELER, Ph. D	Chemist.
‡L. F. KINNEY, B. S	Horticulturist.
§FRED W. CARD	Horticulturist.
GEORGE W. FIELD, Ph. D	Biologist.
J. D. TOWAR, B. S	Assistant Agriculturist.
JOSEPH A. TILLINGHAST	Director of Field Experiments.
B. L. HARTWELL, B. S	Assistant Chemist.
GEORGE E. ADAMS, B. S	Assistant Horticulturist.
NATHANIEL HELME	Meteorologist.

The Experiment Station Council consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.

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THE COLLEGE.

HISTORY.

IN 1863 the State of Rhode Island accepted from the Unite States Government the land grant scrip, which gave to eac State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold b the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim th benefit of this act, to the endowment, support and maintenance o at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related t Agriculture and Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promot the liberal and practical education of the industrial classes in th several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed appropriating $15,000 annually to each State, for the purpose o establishing an Agricultural Experiment Station in connectio with an Agricultural College or School.*

From the time of the acceptance by the State of Rhode Islan of the land scrip in 1863, there were many people who felt tha this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded that ha genuine agricultural and mechanical colleges. So great was the dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

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* See Bulletin No. 1 of Experiment Station.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6.)

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with $15,000, and continuing with a yearly increase of $1,000 until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Laws (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

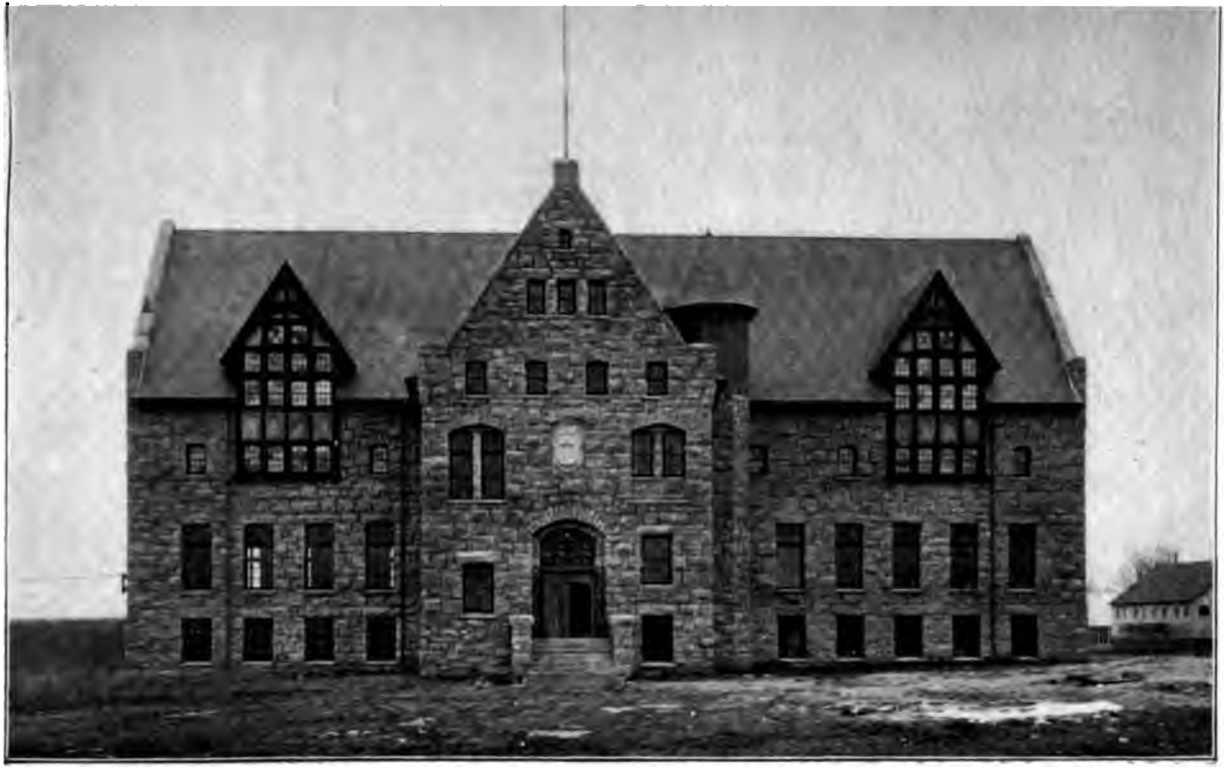
Since September, 1892, the institution has been conducted on a college basis, with an entirely new course of study.

On April 19, 1894, the legislature passed an act authorizing the State treasurer to pay Brown University the sum of $40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

On January 27, 1895, the college dormitory was destroyed by fire; but it was replaced by a new granite building, which was ready for use the first of October.

GROWTH DURING 1897.

At the January session of the legislature, 1897, the institution was given an appropriation for a stone building, one hundred and thirty feet by forty feet, practically three stories high. The base-



LIPPITT HALL.

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has three rooms used for instruction in photography and cs, and a large room devoted to electrical engineering. On econd floor are recitation rooms, chapel, library and reading-, and young women's study-room. The third floor contains ge hall for drill and gymnasium purposes, above which are ooms and lockers. The hall is also used for assemblies, ever larger audiences are expected than the chapel can acodate. The building is well equipped with apparatus which ollege has owned for some time, and has been waiting to where the most benefit might be derived from it.

ring the past year Miss Anna B. Peckham resigned her posias assistant in languages, to continue her studies elsewhere, iss Mary W. Rockwell succeeded her. The appointment of F. W. Card as horticulturist promises to strengthen the horural department. By the addition to the faculty of Dr. J. cher as associate professor of chemistry, continuous instrucin the chemical laboratory has been rendered possible, and ourse in chemistry has profited greatly. It has seemed wise d this year to our courses stenography and typewriting, to y a long felt need on the part of some of our students. Miss E. Brooks has been appointed instructor in this depart. At the opening of the fall term Miss Mabel D. Eldred beork as instructor in drawing, to fill the vacancy made by the ation of Miss Mary P. Helme, in June last.

number of students has increased and the quality of scholhas materially improved during the past year. It will be ssible to admit more students to the institution under the nt boarding arrangements. Meals are now furnished to one red and five persons. There is only one kitchen, and in that linary arrangements are very inadequate. It is hoped that sion will be made for a small addition to the boarding-hall, to rise a kitchen, rooms for servants, and for the storing of supnecessary to the economical management of such a house. lso hoped that within a short time the institution may have tle barn so that it may raise its own cattle, not only for use in instruction in the agricultural department but also for the p duction of milk and butter for the boarding-hall.

During the fall term the institution, in coöperation with G eral Stone, of the Division of Good Roads, Department of A culture, Washington, D. C., gave illustrations of the buildin macadam roads in accordance with the principles which the ernment is endeavoring to teach those people in the country are interested in good roads. As an outgrowth of this wo department of road construction has been established at the lege. A roller, a distributing cart, a crusher, and all the best chinery used in modern road-making, have been secured. department has already created a great deal of interest thro out the country, and it is believed that this will be a very u line of instruction for the young men of the State.

During the past year Miss E. L. Jones has been employe catalogue the library. The catalogue records over seven thou volumes and numerous pamphlets, all but a few of which been bought within four years.

During the summer vacation Dr. G. T. Swarts, of the S Board of Health, made a thorough inspection of the institu and pronounced its plumbing, general location, and condition isfactory.

OBJECT OF THE INSTITUTION.

The college stands for the idea that technical work, prop taught, possesses educative value equal at least to that furni by the classics, but that premature specialization is to be avo if the best results are to be attained; that technical educatio meet the requirements, must be based upon a sound knowl of mathematics, the natural sciences, and the English langu

The college expects the student to be skilled in the use of tools of education, viz.: reading, writing, and arithmetic, with these it aims to assist him to build an educational struc based upon (1) power of correctly observing, (2) power of exa describing the observations, and (3) power of drawing strictly ical inferences from the observations. The method employed is technical instruction in agriculture, in the mechanic arts, and in the sciences. The student who enters for a full course selects one of five courses, or groups. Each of these offers special facilities in the branches peculiar to it; and in addition, extended studies in language and literature find a place in each course, as the student is impressed with the fact that the purpose of education is two-fold, to confer the utmost benefits upon the community through the individual, and, further, to give to the individual the utmost pleasure and satisfaction for himself.

So far as possible the same opportunities are open to those whose previous preparation has not been so fortunate, and it is hoped that no one will be deterred from making use of them either from a lack of earlier advantages or of money. Thus far no worthy student has been compelled to leave the institution for lack of means. The institution is free to any inhabitant of Rhode Island who is of good character and has the ability to take advantage of the opportunities here offered.

Short courses in agriculture and certain lines of mechanics, and special work in science, are open to those unable to take the regular college work. For these courses no examination is required, except such as will satisfy the professor in charge of any branch chosen that the applicant is prepared to derive benefit from the work he wishes to elect. Whenever possible, however, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is believed that no such thorough preparation can be obtained from special courses elected by the student.

REQUIREMENTS FOR ADMISSION TO PREPARATORY DEPARTMENT, 1898.

Candidates for admission must bring testimonials of good character and must be not less than fifteen years of age. Oral and written examinations will be given in advanced arithmetic, geography, English grammar, and United States history. Each candidate will be required to write a short composition upon a subject announced at the time of the examination. The composition will be expected to show familiarity with the works mentioned below: Hawthorne's Wonder Book, Dickens's Christmas Carol, Irving's Sketch Book, Scott's Lady of the Lake, Longfellow's Evangeline. Applicants for the regular course will find some knowledge of algebra of great assistance.

Students entering the preparatory department may take, together with the regular studies of this course, any other work from the college courses for which they are prepared.

REQUIREMENTS FOR ADMISSION TO THE COLLEGE, 1898.

Candidates for admission to the Freshman class will be examined in arithmetic; algebra; plane geometry; English grammar; advanced English; United States history; geography, physical and political; one year of German, French, or Latin.

In the arithmetic examination especial attention will be paid to fractions, the metric system, simple and compound proportion and square and cube root; thorough drill in mental arithmetic will be necessary. The applicant should have mastered all of Wells's Academic or Wentworth's School Algebra, and Wells's Plane Geometry, or their equivalents. In geography, familiarity with some common school text-book will be expected. Frye's geography is recommended. The history requirements will be met by familiarity with Fiske's or some similar United States history. The examination in English grammar will include definitions, formation of plurals, inflexion of nouns, pronouns and verbs, comparison of adjectives and adverbs, analysis and parsing, with especial attention to punctuation and the use of capitals The advanced English requirements are those prescribed for entrance to the New England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter, and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. The books prescribed for 1898 are the following: (*a*) Milton's Paradise Lost, books I and II; Pope's Iliad, books I and XXII; The Sir Roger de Coverley Papers, in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's Rime of the Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. (*b*) Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's Flight of a Tartar Tribe; Tennyson's The Princess. For 1899: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, books I, VI, XXII, XXIV; The Sir Roger de Coverley Papers, in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mochicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. (*b*) Shakespeare's Macbeth; Milton's Paradise Lost, books, I and II; Burke's Conciliation with America; Carlyle's Essay on Burns. For 1900: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, books I, VI, XXII, XXIV; The Sir Roger de Coverley Papers, in the Spectator; Goldsmith's The Vicar of Wakefield; Scott's Ivanhoe; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Tennyson's The Princess; Lowell's The Vision of Sir Launfal. (*b*) Shakespeare's Macbeth; Milton's Paradise Lost, books I and II, Burke's Conciliation with America; Macaulay's essays on Milton and on Addison. The language requirements will cover one year's work in either French, German, or Latin. In French and German, this requirement comprises the essentials of grammar, easy reading, and elementary composition. In Latin, the candidate must be prepared to study Cæsar. The following text-books are recommended: Chardenal's Complete French Course, Lyon and De Lapent's Primary French Translation Book; the Joynes-Meiss German Grammar, Part I; Guerber's Märchen and Erzählung Part I; Collar and Daniel's Beginner's Latin Book.

ADMISSION TO ADVANCED STANDING.

Candidates may enter any of the higher classes for whose w they are prepared.

OPPORTUNITIES OFFERED TO WOMEN.

The courses offered to men are open to women, together wi special courses. The women's dormitory will accommodate limited number of students, and the college will on applicati find boarding places for others in private families in town. Spec waiting and study rooms are provided for the women who are d students.

EXPENSES FOR WOMEN.

Board, including room rent, is three dollars per week. F and lights are supplied at cost. Rooms are provided with nec sary furniture, including mattresses, but no other bedding ma rial. Other expenses are as given below. The women have opportunity to do their own washing and ironing. A Singer a Household sewing-machine are at the disposal of all those ing at the dormitory.

EXPENSES.*

Tuition is free to all Rhode Island students. The regular penses are tabulated below:

	Per Year.	
	Minimum.	Maxi
Room rent, $2 per term	$6 00	$
Board, $3 per week, for 36 weeks	108 00	10
Fuel, spring and fall terms, each $3, winter term $6	12 00	1

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*For exceptions in the expenses for women, see above.

	Per Year.	
	Minimum.	Maximum.
Light, $1 to $3 per term	$3 00	$9 00
Books	15 00	30 00
Washing, 30c. to 60c. per week	10 80	21 60
Uniform for military drill, $15	7 50	30 00
Reading room tax, 25c. per term	75	75
General expense, for damage in buildings, etc., 50c. per term	1 50	1 50
Laboratory fees, $2 to $10 per term	6 00	30 00
	$170 55	$248 85

The amount of laboratory fees depends upon the laboratory work taken each term. One dollar per term is charged for each of the following: botanical, zoölogical and physical laboratories; carpenter shop; wood-turning; forge shop; machine shop and wood-carving. This pays for the material ordinarily used in class work and for the wear and care of tools and apparatus. Any person who breaks apparatus or tools through carelessness or neglect of instructions, will be charged the cost of the same. The chemical laboratory fee is three dollars per term for qualitative, quantitative and organic laboratory work. This covers general chemicals and use of apparatus. Students are required to pay for breakage and for any chemicals they may use in making special preparations for themselves. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. Every able-bodied male student is required to drill and to wear a uniform. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time. A reduction of fifty cents per week on board is allowed to students going home Friday afternoon and returning Monday forenoon, provided that notice of the intended absence is given in advance. Those failing to give such notice will be charged full price for board. No other reduction is made for less than three whole days' absence at one time, and this only when notice is given as above. Fifteen cents extra is charged for each meal sent to a student's room, from sickness or any other cause. The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station. All students in the men's dormitory are required to supply their own furniture and bedding. The necessary furniture may be obtained at the college when desired. A room may be furnished for from eight to ten dollars. Iron bedsteads three feet wide and curtains are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All clothing should be distinctly marked. Graduates pay the cost of diplomas, five dollars. No diploma will be issued until the candidate has paid all term bills. Day students are required to deposit ten dollars per term in advance. Boarding students shall pay term bills in advance, deposit fifty dollars each term, or give bond for two hundred dollars for the payment of all bills. No bond will be accepted from any member of the faculty.

SELF-HELP.

A limited amount of work about the buildings, on the farm, at the experiment station, and in the laboratories, will be furnished to students who desire it, and who prove industrious and trustworthy. Good students, who desire to help in paying their expenses, should be able to earn from twenty-five to one hundred dollars per year, depending upon the amount of time they can spare from their studies. *No work is given to students who have not a fair standing in their classes.* The larger sums can be earned only by students who spend their vacations here at work. These opportunities are offered only to students who show a sense of responsibility in the performance of the duties assigned to them, and a disposition to render a fair equivalent of work for the com-

REGULATIONS OF THE COLLEGE.

Students who do not understand the elements of gentlemanly conduct will not continue to be members of the institution. Negligence or absence from class duties of any kind will be vigorously opposed. Students are expected to attend all recitations. An excuse for absence from a single exercise is not required. It is supposed that the student will not absent himself unless he has sufficient reason for doing so, and of this reason he must himself be judge. Any student absenting himself from more than ten per cent. of the total number of recitations in any subject shall not be allowed to take his examination in that subject, except by special vote of the faculty, but shall be conditioned. Examinations of conditioned students shall be held only on the days assigned in the college calendar. Any student who after such examination shall still have three or more conditions shall be obliged to withdraw from the college. Students still having not more than two conditions may take second examinations at the next regular time, and failing to pass shall have no further opportunity to remove such conditions, except by special vote of the faculty.

Students rooming in the dormitory are expected to conduct themselves with the same decorum as in a private house. Any undue noise or actions liable to disturb the other occupants of the building will cause the offender to be publicly warned; and on a repetition of the offence, he will be dismissed from the dormitory, for a stated time or permanently, according to the nature of the offence. Money paid for dormitory expenses will not be returned to any student thus dismissed.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day. Absence from chapel must be reported at the president's office for excuse on Tuesday morning of each week.

A branch of the Intercollegiate Young Men's Christian A
tion is doing good work among the students, as is also the
Women's Christian Union. Eminent preachers are from
time invited to address the students.

LOCATION.

The college is situated on a hillside, which furnishes
quick drainage and a delightful view. It is less than tw
from the railroad station. A macadamized road leads fr
grounds to the station, insuring at all times a good walk an
The railroad station is situated on the New York, New H
Hartford R. R., with twenty-one trains daily, in the winte
ping at Kingston, and more in the summer. The town is
healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

CHEMISTRY.

Instruction in chemistry begins with the third term of the Sophomore year, and consists of recitations and lectures with laboratory work. Any branch of chemistry may be elected for special work. Since 1897 a chemical course has been offered. General chemistry is taught during the last term of the Sophomore and the first term of the Junior year, in three exercises of ecitation and lectures and one exercise of laboratory work each eek. Special attention is given to inorganic preparations and roblems. Qualitative analysis extends through two terms and is ollowed by volumetric and quantitative analysis. A course in rganic chemistry, in the winter term of the Junior year, treats of he hydrocarbons and their derivatives as far as the benzine eries, three exercises per week being devoted to recitations and ectures, and one exercise to laboratory work. The class work is ased upon Remsen's Organic Chemistry, and the laboratory ractice on Gattermann's Practical Methods of Organic Chemistry. An elective on the benzine series, with two recitations and one exercise of laboratory practice per week, is given in the spring term. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion; analysis of soils, fodders, and fertilizers, milk, butter, and cheese; tests for poisons in the stomachs of different animals; analysis of fruits for sugar, starch, and albuminoids; and the study of chemical changes in soils. Women may substitute for agricultural chemistry an elective on the chemistry of cooki A five-hour course in sanitary chemistry or in physiologi chemistry may be taken by students who have completed cour I, II, III, and IV. Elective work in the dyeing of wool, cot and silk, and of mixtures of the same, is offered to those who ha finished the courses in general and organic chemistry and quan tative analysis.

PHYSICS.

Instruction in physics begins with the first term, Freshman ye and consists of lectures and recitations attended by all regul students. The various branches grouped under this head a treated both mathematically and experimentally, particular atte tion being given to practical application. Heat and sound a studied in the fall term, magnetism and electricity in the win term, and light and mechanics in the spring term. The win term is devoted entirely to the study of electricity and magnetis The advanced study of light embraces an extended discussion photography, photo-micrography, the use of the microscope a of the projecting lantern. This department is fully equipped illustrate the use of any form of light employed at the pres time in projection work, together with all accessories includi the projection microscope and apparatus for the projection photographs in original color.

A course in advanced physics is open to all students who ha completed course I, or its equivalent. This course includes deeper and more theoretical study of the subjects of course and is treated by lectures and recitations, together with an tended course in laboratory work designed to make the stud more careful and accurate in his work and to encourage origi investigation.

A special course in electricity is now open to all students hav an elementary knowledge of the subject. As a foundation subsequent work, instruction is given in the theory of electric together with thorough consideration of the various technical applications of electricity, including land and sub-marine telegraphy, the telephone, electric lighting, and the electrical generation and transmission of power. Advanced instruction is given in electrical measurements, including the use of the storage battery (which is constantly becoming more valuable to electric plants), methods of electrolysis, electro-plating and electro-metallurgy, together with a practical understanding of generators and the testing of telegraph and telephone lines.

Special instruction in photography is offered in an elective course to students who have an elementary knowledge of physics and chemistry. The course embraces lectures and recitations upon the subject, together with practical methods of photography in the working of negatives, photographs, bromide enlargements and lantern slides. The college is supplied with the most approved form of apparatus for X-ray photography, and the theory of the work in this line is taught, together with its practical applications. Special rooms for photographic work are provided, which will aid greatly to improve the instruction in this branch.

Facilities for instruction in physics are now of the best. A large room in Lippitt Hall is arranged especially for laboratory work, and the apparatus room adjoining is sufficient to hold the lecture-room and experimental apparatus with which the department is well equipped.

A course in electrical engineering will be open to students as soon as the large laboratory provided in the basement of Lippitt Hall can be properly equipped with machines for experimental work. This laboratory is already provided with two sixty horse-power boilers, three engines, one of which is a fifty horse-power Armington and Sims, used in connection with an Eddy twenty-five K. W. machine for lighting the college, and one eight K. W. dynamo that is used for experimental work. A storage battery of the most approved type, of 110 cells, is also in place for the course.

PHYSIOGRAPHY.

The Freshman class study physiography during the first t with three exercises per week of recitation and one of labora work, with occasional excursions and field work. A well equip physiographic laboratory, with globes, models, maps, charts other illustrative material, together with a special library, is c to the students. Especial attention is given to the scien phases of the study—to the chemistry and geology of the s the influence of air and water on the same; and some reading time are expended on the flora and fauna of the different c tries. Tarr's Physical Geography is taken as a basis; and Da Coral Islands, Shaler's Aspects of the Earth, and Dana's Cha teristics of Volcanoes are thoroughly studied during the t Five hundred lantern slides illustrating ethnological subjects projected and explained before the class. This course se especially valuable to introduce the student to the scien studies which are to follow.

AGRICULTURAL GEOLOGY.

The course in agricultural geology embraces structural, dyn cal and historical geology, particular attention being paid to first mentioned subdivision. A careful study is made of t minerals and rocks of importance in the formation of soils, o agencies by which their decomposition is effected, and of compounds which result. In this connection the instructio designed to familiarize the student with the desirable mineral physical features of soils, with those compounds the presen which is undesirable or which may give rise to a greater o degree of soil sterility, and with the means by which such co tions may be avoided or overcome. A proportionate amou time is devoted to the history of those natural deposits of par lar interest to agriculturists; such as, nitrate of soda, the Ger potash salts, and phosphates of various kinds.

BOTANY.

The required work in botany for students in agriculture covers three terms. The first two terms are devoted to the study of a few groups of plants from the lowest to the highest. Seed-plants of economic importance are studied in the third term, special attention being given to grasses, fodder plants and weeds. Physiological problems are occasionally introduced. Each student is supplied with a compound microscope, a dissecting microscope, reagents and small instruments. The laboratory is provided with apparatus for simple physiological experiments, a microtome, paraffin bath, charts, thirty Brendel models, Briosi and Cavara's Parasitic Fungi of cultivated plants, Ellis's Fungi Columbiani, Seymour and Earle's Economic Fungi, and an increasing collection of native plants. A good working library and several American and foreign periodicals are an important part of the equipment of the laboratory.

It is believed that excellent advantages are offered for those who wish to elect work in the parasitic fungi of seed-plants. The laboratory is provided with a supply of dry and alcoholic material, and collecting fields for fresh material are near at hand.

For the class of 1902, the botanical work will be in general as outlined above, but somewhat elaborated to suit the needs of the more advanced students.

COMPARATIVE ANATOMY AND PHYSIOLOGY.

Third Year.—Comparative anatomy and physiology, chiefly of the vertebrated animals, during the winter and spring terms.

Fourth Year.—Veterinary science during the fall term; physiological psychology through the winter term.

This department has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Leuckart's zoölogical wall-charts, and other charts and diagrams of our own make, (5) ample blackboard facilities of which much is made, (6) chemical and physical apparatus, (7) all necessary mechanical appliances. The collection of skeletons of all the domestic animals cannot be excelled. In the class of birds there have been added all the species of Rhode Island, comprising some 270 individuals. These prove of exceptional interest and stimulate inquiry because of their local habitat and more or less familiar mien. In the collection are found the skeletons of the great classes of birds showing striking structural peculiarities. It is also proposed to add the nests and eggs of all those species of the collection which nest in the State. It will thus be seen that there is an exceptionally good equipment for teaching the courses in zoölogy, physiology, and anatomy, both human and comparative, which are so liberally provided for in this college.

Apparatus is being collected for the course in experimental psychology. The course occupies but one term, and the time given to experimentation is limited. The demonstrations are simple mechanical appliances to illustrate the sensations and perceptions. But few experiments are attempted on the more complex mental phenomena, which require intricate and costly appliances, much time, and more special training than the college students can summon. The beautiful models and charts of the human brain, spinal cord, and organs of special sense, are most serviceable in teaching the mechanism and functions of the great nerve centres. The appliances in this department are so complete as to expedite the study in no small degree. It is believed that a more lively interest is thus created, that more ground is covered, and that a clearer comprehension of this branch is given than could otherwise be done in twice the time allotted to it. The same claim may be predicated of the whole range of biological studies.

ZOÖLOGY.

This department is open to students who have done satisfactory work in the course in biology of plants, or an equivalent. There are two general courses; for Sophomores in animal biology, and for Juniors in zoölogy. Instruction in animal biology embraces a careful treatment, through the laboratory, lecture and text-book, of the general anatomical, physiological and developmental phenomena of animal life; the conditions and the causes of the broad manifestations of life, in the cell, in the individual, and in the race. The types studied are: Amœba, Paramœcium, Vorticella, Hydra, earthworm, frog. Among the questions dealt with are the meaning of such terms as protoplasm, nutrition, growth, reproduction, life, death, the physiological division of labor, heredity, the views held by the different schools of evolutionists, the variation of species, effect of environment, natural selection, parasitism, and geographical distribution. In brief, it is a course adapted for the general student who wishes a knowledge sufficient to comprehend and to profit by the important current discussions bearing upon man's relations to his environment; at the same time it gives a broad foundation for one who plans to enter upon a career in biological science, either as teacher, investigator, or medical practitioner.

The course in zoölogy is intended especially for (1) agricultural students, (2) students who are preparing for entrance to the medical profession, (3) those who, having pursued the courses in plant and animal biology, wish to advance further into the science as teachers and investigators. Instruction is by actual dissection

of the fresh specimens supplemented by lectures, text-book a
written exercises.

Proximity to sea-coast renders possible the study under natu
conditions, as well as in aquaria, of the habits and developme
of many marine animals. The Experiment Station's Marine La
oratory, under the direction of the professor of zoölogy, is open
students who show capacity for effective work. It is located
the shores of the town, near Point Judith, and offers excelle
opportunities for original investigation and experimentation up
problems of marine biology. Further opportunities for study a
furnished by springs, streams, ponds (natural and artificial), a
lakes, upon or immediately adjacent to the college grounds. Th
added to the location of the college township—in the southe
corner of Rhode Island, with its diversity of coast line, the e
on Narragansett bay, its south shore on the Atlantic—renders t
institution an ideal locality for biological study.

The department is provided with Leuckart's charts; Ziegle
and other models; preparations of skins and skeletons of typic
vertebrated animals; including such rare forms as the goril
chimpanzee, lemurs, phalangers, manatee, and sloth; the bir
and mammals peculiar to the Australian region; the lung-fish
(Dipnoi); the Surinam toad; the giant salamander (C. Japonicus
preserved specimens and preparations of the most important i
vertebrated forms; including Nautilus in shell, Argonauta, a
Metacrinus; aquaria for living specimens; projection lantern f
class demonstration of macroscopic and microscopic preparatio
The department library includes the best literature on the subje
all of the current zoölogical journals are available, either at t
Experiment Station library, or by special arrangements. T
collection illustrating the zoölogy of Rhode Island is the best
the State, and is steadily growing.

Advanced courses are open to students who have had the req
site training. Comparative normal histology, dealing with the
croscopical structure of cells and tissues of the organs of the lo
and of the higher animals, including modern methods of mi

chemical technique and histological investigation, is a course particularly adapted for students who intend to fit themselves for the medical profession. The course in morphology of the invertebrated animals offers an opportunity for careful study of the marine forms found in Narragansett bay, and in addition certain typical forms from abroad. A course in comparative osteology of the vertebrated animals permits an extension of the courses in comparative anatomy. Comparative embryology is offered as a special course to students who are sufficently advanced. General comparative embryology is covered in the courses in plant and animal biology.

Students who wish to make a specialty of biological science for the purpose of becoming science teachers or of pursuing a medical course are advised to give the utmost possible attention to physiography; chemistry; physics; English; German; French; Latin; free-hand drawing, including watér colors; civil government and political economy, in addition to the biological sciences.

Students are urged to consult freely with their instructors in regard to selection of courses.

AGRICULTURE.

In connection with the new course in agriculture, it may be said that the foundation instruction is largely given in the study of chemistry, botany, physics, geology, anatomy, physiology, zoölogy, and economics.

Following upon this fundamental knowledge, it is the aim in the agricultural course to teach the student the practical application of the scientific principles underlying technical agriculture. This is sought to be accomplished by means of lectures and recitations and by the use of text-books and reference books so far as available. The chief desire is to supplement, enforce and fix this instruction by what may be termed laboratory work in agriculture; that is, by actual educational practice in the different branches of farming.

Commencing in the spring term of the Freshman year, an troduction is given in the form of lectures dealing with the ori and necessity of agriculture, its relation to other occupations, preparation for farming, the relations of air, water and sunsh and of plant and animal life to agriculture. In the Sophom year a study is made of farm soils—their characteristics, clas cation and adaptions, their faults and means of improvem clearing land and preparing for crops, irrigation and land dr age, with practice in planning and constructing systems of und draining on the college farm. In the winter term instructio supplied in the construction, use and care of farm impleme machines and vehicles; and in the arrangement, construction maintenance of farm buildings, fences, roads, and bridges. In spring term fertilization is dealt with, and the instruction is inforced by object lessons offered by the fertilization experim of the experiment station department and by the manuring the farm crops. In the Junior year, horticulture is chiefly taug embracing the topics—garden crops, market-gardening and gre house culture, fruit culture, floriculture and ornamental garden with plant breeding and forestry as special elective subjects. the Senior year opportunity is provided to study live stock h bandry, including the breeds, breeding, care and managemen farm animals; rational feeding of live stock; dairy husband poultry culture; farm management and accounts.

Further elective subjects are available to advanced students special arrangement, including the history and economics of ag culture, agricultural and horticultural literature, farm law, apic ture, agricultural debate, and agricultural experimentation.

During the course in agriculture occasional inspection exc sions will be made by the classes to learn what practical, succe ful specialists in the various branches of modern farming doing.

Plans for short special courses in agriculture have been ma These courses will instruct special students in the principles details of the best modern practical poultry farming, dairy fa ing and horticulture. For putting these courses into operation the college awaits the providing by the State of suitable buildings. There are funds available for the purchase of live stock, apparatus and equipment, also for instruction. The provision of the needed buildings will at the same time greatly reinforce the means of instruction in the regular agricultural course.

HORTICULTURE.

In September, 1898, Prof. F. W. Card will arrange the courses in horticulture. The new courses will be published in the catalogue for 1899.

LANGUAGES.

The subjects grouped under this head are English, German, French, Latin, and expression. In September, 1898, the new courses of study will be adopted, affecting for the most part preparatory students and Freshmen.

English—comprising composition, rhetoric, and literature—may be studied throughout the four years. It will be required during the preparatory year and the first three years of the collegiate course. The work of the preparatory students will consist of a review of English grammar, and a study of Lockwood's Lessons in English. Exercises in composition and American literature will be features of this course. The theory and practice of rhetoric will be taught throughout the Freshman year, and the application of rhetorical principles will be sought in illustrative readings and fortnightly themes. In 1898 this course will be required of the Sophomores during the fall and winter terms. In 1899 the Sophomores will make a critical study of certain prose masterpieces and will write essays and various short papers. The required work of the Juniors will consist of a study of the great English poets from Chaucer to Tennyson. Collateral reading will be supplied, and students will be encouraged to special investigation along literary and historical lines. In the Senior year ‹ tives are offered at present in literature and themes. In work in historical English and argumentation may also be ta In the new courses three years of foreign language study wil required for graduation, one preparatory and two advanced. desirable that two of the three years be spent upon one langu

A three years' course in German has been arranged, which be begun in either the Freshman or Sophomore year. As as possible the language itself is made the medium of instruc and the subject is studied in grammar work, dictation, conve tion, and translation—from English into German and from man into English. The course is carefully graded. As soon small vocabulary is acquired the student begins the readin simple prose and poetry, passing gradually to more difficult t Course IV—Scientific German—may be taken instead of I German Classics—by those especially interested in scien work.

French is begun in the Freshman year and may be stu throughout the four years. Nine courses are offered. The struction in this language is similar to that given in Gern Grammar, conversation, dictation, translation, and composition taught. Scientific French is studied during the spring tern the second year.

Latin is elective. The college offers a two years' cou Should a student wish to pursue the subject farther, he may d at his own expense, by taking private lessons of the instruc Much attention will be paid to derivation of words, in order such study may aid in comprehending the terminology of scie

The aim of the course in expression is to teach one to read ea and intelligently, and to think accurately and rapidly. The w consists of sight reading, extemporaneous speaking, recitati and the delivery of original orations. Expression is elec throughout the course.

In the building of Lippitt Hall excellent accommodations v provided for the library. Students now have freer access to books than was possible before, and it is believed that the library will prove a valuable addition to the educational facilities of the college.

MATHEMATICS.

Beginning with September, 1898, three courses in mathematics are prescribed for all candidates for a degree ; the subjects being higher algebra, plane trigonometry, and solid and spherical geometry. The work extends throughout the Freshman year, and is of the utmost importance, both as a basis for further work in mathematics and science, and as a means for developing the power of logical reasoning and of exact and concise expression. It is the aim throughout the course to select such problems and applications as shall have direct bearing upon practical subjects.

Courses in analytical geometry and calculus are required of students in the mechanical and physics-mathematical courses, in addition to the above, and a number of electives are open to students who propose to make a specialty of mathematics or of any of the sciences which depend largely upon it.

The course in analytical geometry includes the subject of loci and their equations, the analytical demonstration of many geometrical theorems, and the simpler properties of the conic sections. The work in calculus includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiation, and the integration of simple functions, illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for integration are studied, and a short time is devoted to the interesting subject of curve-tracing.

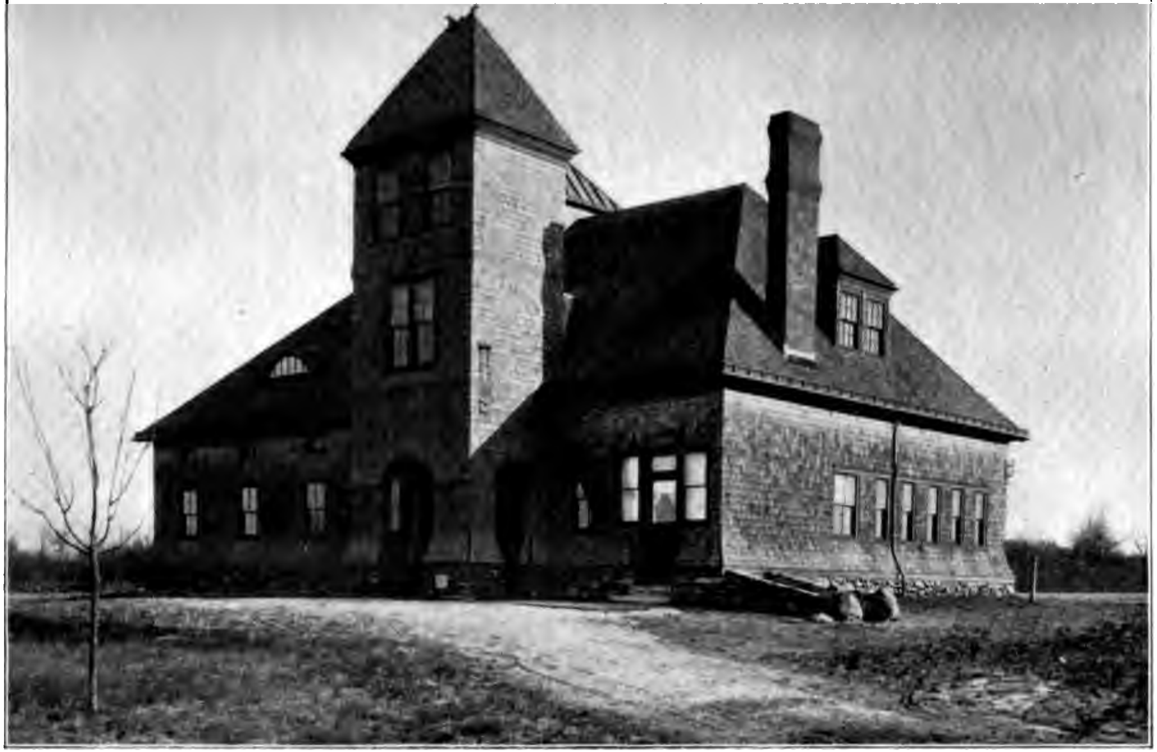
Students wishing to prepare for advanced work along the lines of mechanical or electrical engineering are especially advised to elect the courses offered in advanced integral calculus, analytical mechanics, and differential equations, while those who desire an insight into the development of modern pure mathematics may elect work in projective geometry, modern analytical geometry, theory of equations, and theory of functions.

Two elective courses are offered in astronomy, one in practical astronomy, in which the simpler problems of practical astronomy are discussed, and a lecture course in physical astronomy, the aim of which is to make the students familiar with the general characteristics of the various members of the solar system, and to emphasize the general laws which govern the universe. A four-inch equatorial telescope, an eighteen-inch celestial globe, a large collection of lantern-slides of astronomical phenomena, and a small but carefully chosen reference library, add greatly to the resources of the department.

In civil engineering three courses are offered. Plane surveying is taken up by the agricultural Sophomores in the spring term, and is followed by a course in leveling, grading, and road construction during the first term of the Junior year. This work is supplemented by practice with the compass, chain, and transit in measuring areas and plotting land, as well as work with the levels, drawing profiles, and establishing grade lines for roads. More advanced work in engineering is offered the Seniors in the spring term, while thoroughout the course practical surveying is given those students desirous of doing extra work in this line.

MECHANICAL ENGINEERING.

The aim of this department is to give sound theoretical and thorough practical training to students who seek to prepare themselves for useful and responsible positions. No attempt is made to teach trades; but the course offered in shop-work will furnish such training as will ensure, other things being equal, marked success in mechanical pursuits subsequent to graduation. The regular four years' course deals with mechanical engineering as applicable to the industries carried on in New England, and particularly in Rhode Island. Special attention is given to the de-



LADD LABORATORY.

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THE WOOD-WORKING MACHINERY.

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gns and the economical operation of shops and mills, and of anufacturing and industrial machinery. Thorough courses in athematics, physics, chemistry, electricity, English, French, and erman are made the basis of this work. The subjects of mechnism, metallurgy, heating and ventilation of buildings, engineerg specifications. and laws of contracts are treated by lectures nd text-books. The several laboratories are well-equipped for orking in wood and metals and for the testing of materials used construction. Students in the department of mechanical enineering receive instruction in bench-work in wood, wood-turnng, pattern-making, forging, machine-shop work, and mechanical rawing.

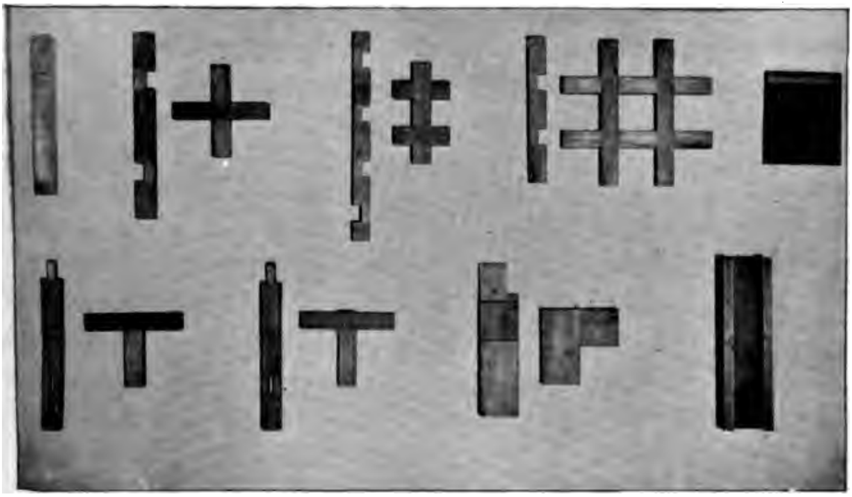
Students in the agricultural department receive instruction in ood-working and forging, and may elect other work with the adice and consent of the committee on studies. Women are given he opportunity to elect wood-carving at any time during the four ears' course. During the winter term of three months, the shops re open to receive persons who may wish to enter the college nd take up special work of a trade nature in any of the above ines. In addition to this work, these students may take a limted amount of time for the study of any related subject.

The carpenter shop contains benches and tools sufficient to acommodate twenty-four students at one time. The course is deigned to give skill and confidence in working the various kinds f wood, and also to impart a fair knowledge of the principles of uilding and construction. A series of practical lectures upon he art of estimating the cost of various constructions of wood is iven to the agricultural students of the Sophomore year. The ood-turning room contains thirteen lathes, each with its complete et of gouges and turning-tools. In the same room are benches or pattern-making, and also power machinery for working wood; uch as, circular saw, hand saw, jig saw, surface planer, buzz planer, mortising machine, dowel machine and others. All students take wood-turning, and during the period each has practice under the direct charge of the engineer in care of the shop boiler and engine. This engine is of thirty horse power; and besides furnishing power for the shop, drives a ten K. W. dynamo for lighting the building. The work in pattern-making given to the students in the mechanical department in the Junior year consists of the making of selected pieces to illustrate the principles of shrinkage, drafts, finish, core-box making, built-up work, and the general requirements of pattern-making.

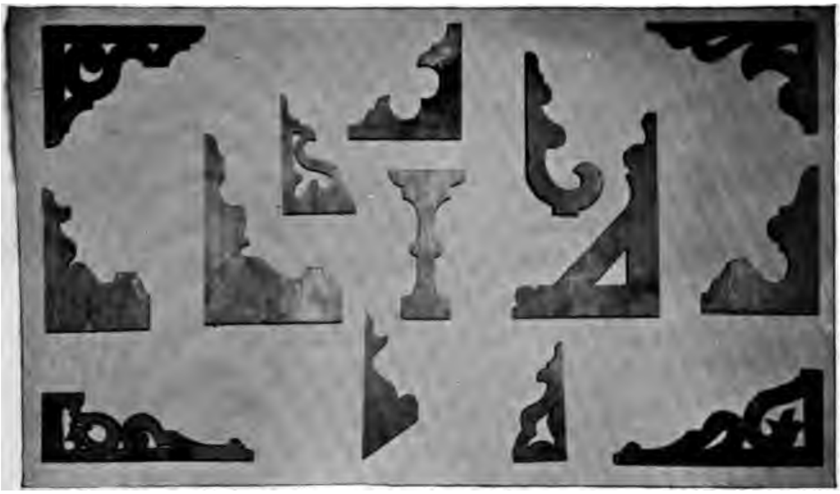
The forge shop will accommodate twelve students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the hammers, tongs, and other forge and anvil tools necessary for complete work. A regular course is followed here as in other lines; and for the students of the agricultural department the work is of such a nature as is found about a farm. The various operations of drawing, bending, upsetting, and welding are taught and applied in the making of such useful pieces as staples, hooks, chains, and iron work for farm tools. The students of the mechanical department follow a similar course but in a direction more suited to the machine shop. Bolts, nuts, machine forgings, chisels, and lathe tools are made, and afterward put to practical use.

Only students in the mechanical department work in the machine shop. The course here is designed to give a sure knowledge of and intelligent practice in the best modern methods of using the various tools; such as, lathes, planers, drills, milling-machines, and grinding machines. A course of hand work at the bench is offered, and includes instruction in chipping, filing, scraping, and finishing. Each student in the machine shop builds a complete machine before finishing the course. Students of former years have made an engine, dynamo, speed lathe, full set of arbors, set of nut arbors, and a variety of other tools.

In experimental engineering the students make tests of engines, boilers, pumps, steam gauges, injectors and a hydraulic ram. The strength of materials is investigated theoretically in class under the head of mechanics of materials, and practically in the laboratory by conducting tests upon specimens of wood, iron, steel,



COURSE OF JOINERY.



COURSE IN SCROLL SAWING.

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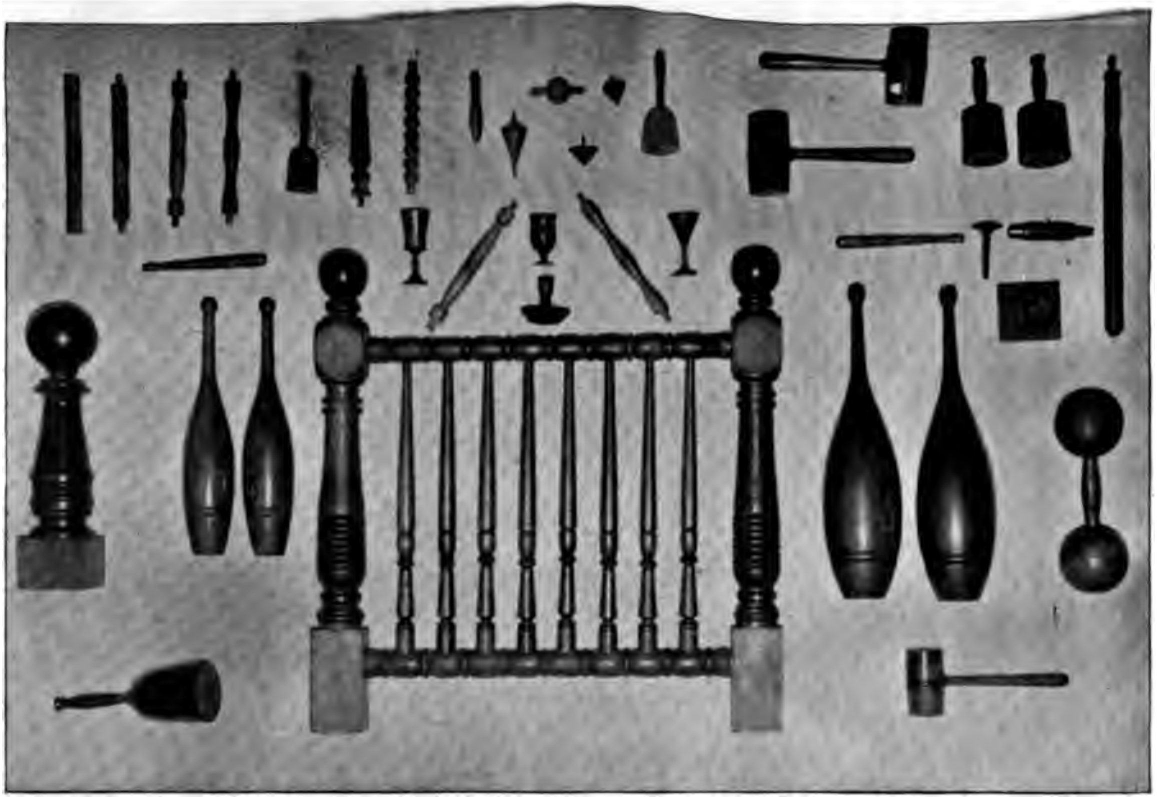

COURSE IN WOOD-TURNING.

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stone, cement, boiler plate, etc. In hydraulics, water meters librated and measurements of water made by orifices and

During the spring term of the Senior year the class in nical engineering holds semi-weekly conferences; reports ven upon articles in the industrial magazines and journals, igineering subjects of general interest are discussed. The ing are some of the topics considered by the class of '95: of steam boilers, furnaces, boiler feeders, fuels, lubricants, d heat engines, preparation and use of wood, cutting tools tals, pumping machinery.

hanical drawing is taught throughout the Sophomore and years. Students are required to keep notebooks, in which nd sketches are made from models; and these sketches are ard worked up into finished drawings. The making of ıg drawings for some machine completes the course. Prac- ı tracing and blue printing is given to all students. The in drawing is designed to aid in the corresponding courses p work and not to produce professional draughtsmen.

EHAND DRAWING AND MODELING.—Freehand drawing is ; only in the spring and fall terms. Freshmen begin in the term with the study of values from objects and still life, uing in the fall to draw and model from casts, with which partment is well supplied. In the Junior and Senior years ıts may elect such work as they are prepared to take. Mem- etches of all objects drawn are expected of each student. ketch class is an interesting feature of the department. neets for one hour once a week and is conducted by its ers, who pose in turn or find a substitute. These time es from life, without instruction, are of great benefit to the t, teaching him to note quickly the effect desired. Each t is required to leave at the college a specimen of his work. ing is required in the Sophomore year. The library of the has a good nucleus of art books.

ıe new course to be adopted in 1898, freehand drawing will uired only in the fall term, Freshman year. In addition to the art electives, comprising drawing from life and the cast, painting in oil, pastel and water color, modeling, and the history of art, special work will be arranged for scientific and mechanical students.

MILITARY SCIENCE AND TACTICS.

The military department is duly organized under Captain William W. Wotherspoon of the 12th Infantry, who was assigned to duty as professor of military science and tactics, by the president of the United States, by special orders No. 257, from the war department, dated November 1, 1894.

It is the intention of the United States government, in organizing the military department at colleges, to prepare the young men of the country to perform with skill and understanding those military duties which will fall upon them in time of national trouble, and to fit them to take positions as officers in the national guard and volunteers. The course consists of both practical and theoretical instruction in the duties of a soldier.

In the practical course, which consists largely of drill, both as infantry and artillery, particular attention is devoted to the physical development of the students. No effort is spared to instill into the cadets a sense of the importance of the work undertaken, and while giving them that quickness and readiness to obey which is so necessary to a soldier, to insure a proper and healthful carriage of the body. All male students in good health are required to take this course, for which purpose they are organized into a battalion of two companies of infantry, from which four batteries of artillery are selected and two classes in military signalling.

The theoretical course, which is entirely by lecture, is taken by the Juniors and Seniors. It consists of logistics, or the movement and camping of troops; organization and tactics; advance and rear guard; out-post duty; reconnaissance; military surveying and map reading; construction of fortifications; the minor operations of war; and the history of campaigns.

The cadets have been uniformed at a very moderate expense, in

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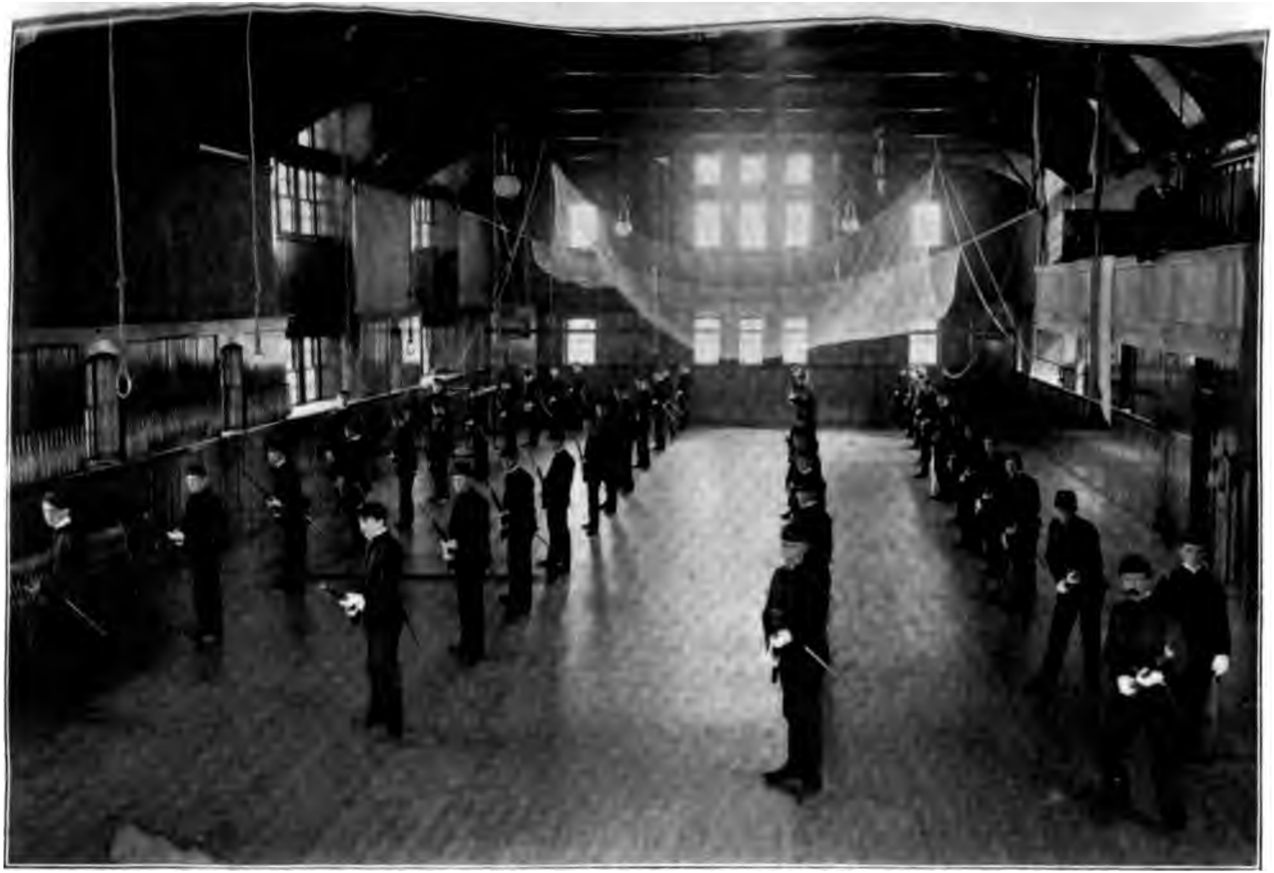

STUDENTS AT DRILL.

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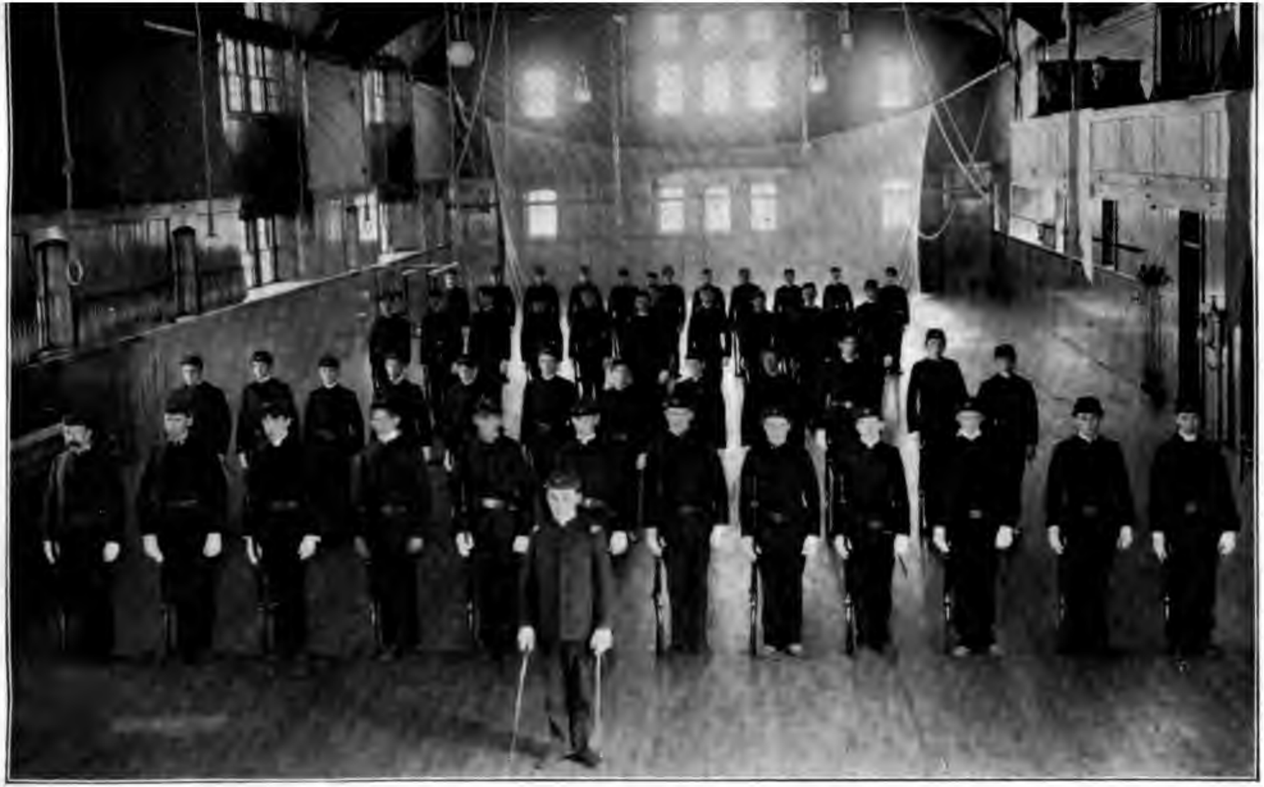

STUDENTS IN DRILL HALL.

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a neat and handsome uniform of fine blue cloth, consisting of a blouse and trousers cut after the pattern worn by the U. S. naval cadets, with forage caps holding the coat of arms of the State of Rhode Island. This uniform is not only handsome and economical, but with moderate care will last a long time.

The facilities for the military course are excellent. The land about the college is of such a character as to permit of the illustration of many of the minor operations of war. The campus affords an unusually good drill ground; and for indoor drill, during inclement weather, the college has one of the largest drill halls, if not the largest, of any institution of learning in the country.

COURSES OF INSTRUCTION.

The following courses of instruction are offered in the differe departments. All studies required of regular students lead the degree of Bachelor of Science.

CHEMISTRY.

I. General Chemistry, Briefer Course.—Non-metals. Recit tions, lectures and laboratory work. *Spring term, Sophomore year* recitations and lectures, *3 exercises per week;* laboratory work, *exercise of 2 hours per week. Required of all candidates for a degree.*

II. General Chemistry.—Metals. Lectures and laboratory work. *Fall term, Junior year; 3 exercises per week. Required o all candidates for a degree.*

III. Qualitative Analysis.—Laboratory work. *Fall term, Junio year; 2 exercises of 2 hours each per week; Winter term, 2 exercise of 3 hours each per week. Required of all candidates for a degre*

IV. Organic Chemistry.—Lectures, recitations, and laborator work. *Winter term, Junior year; 4 exercises per week. Requir of Agricultural students.*

V. Organic Chemistry.—Lectures and laboratory work. *3 exercises per week. Elective; open to students who have taken cours IV.*

VI. Agricultural Chemistry.—Lectures and laboratory work. *Spring term, Junior year; 3 exercises per week.* Laboratory work. *Fall term, Senior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VII. Quantitative Analysis.—Laboratory work. *Spring term, Junior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VIII. Courses in Theoretical or Sanitary Chemistry or Quantitative Analysis.—Laboratory work. *Throughout the Senior year; 2 exercises of 3 hours each per week. Elective; open to students who have taken courses I. and II.*

IX. Dyeing of Textile Fabrics.—*Winter and spring terms, Senior year; three exercises per week. Elective; open to students who have taken courses IV. and VII.*

PHYSICS.

I. General Course.—Study of sound and heat, Fall term; electricity and magnetism, Winter term; light, mechanics, hydraulics, and pneumatics. *Spring term, Freshman year;* recitations, *3 exercises per week;* laboratory work, *1 exercise per week. Required of all candidates for a degree.* In 1898 this course will be required of Sophomores.

II. Advanced Physics.—*Throughout the year;* recitations, *1 exercise per week;* laboratory work, *2 exercises per week. Elective; open to students who have taken course I.*

III. Advanced electrical work.—A course of lectures upon electrical measurements, testing of instruments, dynamos and motors. *Throughout the year.* Lectures, *2 exercises per week;* laboratory work, *1 exercise per week. Elective; open to students who have taken course II.*

ractical applications of electricity. *Throughout the year;* lectures, *2 exercises per week;* laboratory work, *1 exercise per week. Elective; open to students who have taken course III.*

V. Elementary Photography.—A course of lectures and recitations upon the optics and chemistry of photography, together with practical photographic work. *Spring term;* lectures, *2 exercises per week;* laboratory work, *2 exercises per week. Elective; open to all students.*

VI. Advanced photography.—A course of lectures on photomicrography, the making of lantern slides and bromide enlargements, and the manipulation of the optical lantern. *Spring term;* lectures, *2 exercises per week;* laboratory work, *2 exercises per week. Elective; open to students who have taken course V.*

PHYSIOGRAPHY.

Tarr's Physical Geography, with required reading from reference books. Laboratory work and excursions. *Fall term Freshman year; 4 exercises per week. Required of all candidat for a degree.*

GEOLOGY.

Agricultural Geology. Lectures and recitations. *Winter te of Senior year; 2 exercises per week. Required of Agricult students, elective for mechanical students.*

BOTANY.

I. Biology of Plants.—Comparative morphology and ph ogy are emphasized rather than the details of classification. oratory, reading and lectures. *Winter and Spring terms, more year; 4 exercises of two hours each per week. Requ Agricultural students.*

Beginning with the class of 1902 this course, somewha

the Freshman year, winter and spri

for the Agricultural students, and will continue through the following fall term for the Chemical and Biological students.

II. Systematic and Economic.—Seed-plants of economic importance are studied from fresh and preserved material. Special topics in physiology. *Fall term, Junior year;* recitation, *1 exercise per week;* laboratory work, *2 exercises of 2 hours each per week. Required of Agricultural students.*

Beginning with the class of 1902, this course will be given in the fall term of the Sophomore year.

III. Fungi.—A study of fungi with special reference to parasitic forms of economic importance. Laboratory, reading and lectures. *Elective; open to students who have taken courses I. and II. or courses I. and V. Hours arranged with instructor.*

IV. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *Elective; open to students who have taken course I. Hours arranged with instructor.*

V. A study of the Spring Flora of Kingston, with practice in the identification of species. *Spring term;* field and laboratory work, *1 exercise per week. Elective; open to students who have taken course I.*

PHYSIOLOGY.

Advanced Course. — Comparative Anatomy and Physiology. Presupposes knowledge of chemistry and animal biology. Instruction demonstrative, comparative, theoretical. *Fall term, Senior year; 4 exercises per week. Winter term; 3 exercises per week. Required of Agricultural students.*

ZOÖLOGY.

I. Animal Biology.—*Spring term, Junior year; 3 exercises per week. Required of Agricultural students.*

II. Zoölogy.—*Fall term, Senior year; 3 exercises per week.*
tive ; open to students who have taken course I.

III. Comparative Normal Histology.—*Elective. Hours*
ranged with instructor.

IV. Morphology of the Invertebrated Animals.—*Fall t*
Elective. Hours arranged with instructor.

V. Comparative Osteology of the Vertebrated Animals.—
ter term. Elective. Hours arranged with instructor.

V. Comparative Embryology.—*Spring term. Elective. H*
arranged with instructor.

VETERINARY SCIENCE.

Veterinary Science.—Theory of practice. Based on cours
comparative anatomy and physiology. *Spring term, Senior y*
4 exercises per week. Required of Agricultural students.

PSYCHOLOGY.

Elementary Course.—Lectures, recitations, simple labora
experiments. *Spring term, Senior year; 3 exercises per*
Elective.

AGRICULTURE.

I. Introduction.--Definition of terms; origin and necessi
agriculture; relations of agriculture to other industries; agr
ture as an occupation; education for agriculture; the atmos
and sunshine in relation to agriculture: plant and animal l
agriculture. *Spring term, Freshman year; 2 exercises per*
Required of Agricultural students.

II. Soils.—*The origin, formation, and deposition of soil*
studied under physiography; the composition, mechanical and
ical analysis under agricultural chemistry; the physical pro

and relations under soil-physics. Agricultural Soils.—Definition; function; variation; classification; adaptation; location; examination; faults; improvement and preparation; clearing land; grading; mixing soils; paring and burning; reclaiming land; irrigation. *Fall term, Sophomore year; 2 exercises per week for one-half term. Required of Agricultural students.*

III. Land Drainage (Waring).—Sources of water; necessity of drainage; kinds of drains; action of drains; planning system of drainage; drain tiles; construction and care of drains; cost and value of drains; sanitary effects of drainage. *Fall term, Sophomore year; 2 exercises per week for one-half term. Required of Agricultural students.*

IV. Agricultural Apparatus and Constructions.—Farm tools; implements; machines and vehicles; farm buildings; fences; roads and bridges—arrangement, construction, care and maintenance. *Winter term, Sophomore year; 3 exercises per week. Required of Agricultural students.*

V. Farm fertilization.—Introduction; classification of manures, atmospheric, mineral and organic; manurial sources of potash, lime, magnesia, soda, iron, phosphates and nitrogen salts; stable-manure, composition and management; animal manures; liquid manure; farm sewage; guanos; fish fertilizers; animal refuse; peat; green manuring; sea-weeds; vegetable refuse and by-products; composts; divisors for manures; application and action of manures; valuation of manures. *Spring term, Sophomore year; 2 exercises per week. Required of Agricultural students.*

VI. Field and Garden Crops.—Balancing of farm; rotation of crops; grass-land; wood-land; tillage-land; preparation of land, planting, cultivating, harvesting, storing and disposal of crops; special consideration of the hay crop, fodder crops, Indian corn, potatoes, root crops, field and garden vegetables; weeds. *Fall*

VII. Breeds of Farm Animals (Curtis).—Origin, history, ch
acteristics and adaptability of the leading breeds of the hor
neat cattle, sheep, swine and poultry; scoring; tracing pe
grees; breeders' associations. *Fall term, Senior year; 3 exerci
per week. Elective.*

VIII. Live Stock Breeding. — The principles of breedin
hereditary; atavism; correlation; variation; fecundity; in-bree
ing; cross-breeding; relative influence of parents; sex; pedigre
form; selection; the breeding, care and management of the hor
neat cattle, sheep, swine and poultry. *Fall term, Senior year;
exercises per week. Elective.*

IX. History of Agriculture.—Agriculture in relation to civ
ization; fisher and hunter-folk; nomads; tillers of the soil; dev
opment of tillage; history of the plow; crop rotation; irrigatic
fertilization; general and special farming; agricultural educatic
agricultural experimentation; evolution of farming implemen
the farm and the farmer to-day. *Fall term, Senior year; 2 ex
cises per week. Elective by special arrangement.*

X. Feeding of Farm Animals.—Principles of rational feedi
animal body, composition, processes of digestion, assimilat
and excrementation; feeding stuffs, composition and digestibi
nutrients; feeding standards; formulating rations; selectic
feeding stuffs; preparation of food; methods of feeding; util
shelter; special feeding of horse, cow, sheep, swine and po
Winter term, Senior year; 3 exercises per week. Elective.

XI. Dairy Husbandry.—Breeds and breeding of dairy
barns and dairy buildings; milk production, composition
agement, aeration, pasteurization, sterilization, testing, pr
tion, transportation and marketing; creaming; butter-r
cheese-making; milk-preservation, condensed milk, mil
etc.; milk-preparation for infants and invalids; dairy
ology. *Winter term, Senior year; 3 exercises per week.*

XII. Poultry Culture.—Domestic fowls—kinds, breeds, selection and breeding; buildings—location and arrangement, construction and furnishing, ventilation, yards and parks; foods and feeding, care and management, production of eggs and flesh, fattening; dressing and marketing; incubation, natural and artificial; rearing; diseases and enemies; caponizing; records and accounts; special management of turkeys, geese, ducks, and pigeons. *Winter term, Senior year; 2 exercises per week. Elective.*

XIII. Agricultural Economics.—The mutual relations of agriculture and the body politic; the position of agriculture; independence of agriculture; state intervention; legislation; tariff; bounties; taxation; insurance; credit; rewards; census; moral and social aspects of agriculture; division and distribution of farms; size of farms; extensive and intensive farming; ownership of land; inheritance; nationalization of land; government lands; colonization; agricultural laborers, machinery, experimentation; education; association; coöperation; press; agricultural improvement; reclamation and irrigation of land; diversification of products. *Winter term, Senior year; 2 exercises per week. Elective by special arrangement for students who have taken Agriculture VIII.*

XIV. Agricultural and horticultural literature.—An opportunity to read and study in any special line of agriculture or horticulture for which the student is prepared. Examination and consideration of the reports and bulletins of the agricultural experiment stations. *Winter term, Senior year; 2 exercises per week. Elective by special arrangement.*

XV. Farm Management.—Introduction and definitions; farming requisites; farm production and market relations; capital, permanent, floating and perishable, distribution in land, buildings, apparatus, live stock and supplies; labor and power; machinery; kind of farming; size of farm; system of farming; ownership or rental of farm; maintenance and management; returns and results; inventory and balancing of accounts. *Spring term, Senior year; 5 exercises per week. Elective.*

XVI. Farm Accounts and Records. — The principles and methods of book-keeping in their application to the keeping of farm accounts; diary; note-book; calendar; records and accounts of special departments, crops, fields and animals; calculations, estimates, and valuations; inventories. *Spring term, Senior year; 1 exercise per week. Elective.*

XVII. Farm Law.—The legal rights and liabilities of farmers; purchase and sale of farm, forms of deeds; rental of farm, terms of lease; boundaries and fences; overhanging trees; water rights and drainage; ways over the farm; rights in the highway; road-sides; live stock; dogs; game; trespass; theft; fires; insurance; employing laborers; liability of employer and employed; contracts; mortgages; notes; taxes; exchange, sale and purchase; contagious diseases of live stock and crops; *Spring term, Senior year; 1 exercise per week. Elective by special arrangement.*

XVIII. Apiculture.—A study of the habits, care, breeding, and management of the honey-bee, with practical work in the apiary. *Spring term, Senior year; 1 exercise per week. Elective by special arrangement.*

XIX. Agricultural Debate.—Discussion in the form of regular parliamentary debates upon leading agricultural questions. *Spring term, Senior year; 1 exercise per week. Elective.*

XX. Agricultural Experimentation.—A study of the objects, principles, and methods of agricultural experimentation. Opportunity will be given for practical participation in the work of the Experiment Station to those students who arrange to continue this work through the experimental season. *Spring term, Senior year; 2 exercises per week. Elective by special arrangement.*

XXI. Agriculture (Storer).—Relations of heat, air, and water to the soil; influence of soil, atmosphere, heat, light, and water upon the growth of plants; tillage and implements; natural sources of plant food; action of manures; special manures; phosphatic manures; nitrogenous compounds; green manuring; seaweeds: humus; farm-yard manure; composts; modes of applying manures; night soil; history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. Classes of 1899, 1900, 1901. *Winter term, Junior year; 5 exercises per week: Spring term, Junior year; 2 exercises per week. Required of Agricultural students.*

XXII. Fertilizers.—Study of the composition of the various agricultural chemicals as sold in the markets; calculation of formulas for special crops; calculation and value of various home-made fertilizers. Lectures and classroom calculations. Classes of 1899, 1900, 1901. *Spring term, Senior year; 1 exercise per week. Required of Agricultural students.*

HORTICULTURE.

I. Market-gardening and Greenhouse Culture.—Location, soil, preparation and equipment; construction, maintenance and management of hot-beds, cold frames, forcing pits, and greenhouses; market-garden and greenhouse crops. *Winter term, Junior year; 3 exercises per week. Required of Agricultural students.*

II. Plant Breeding.—Heredity; variation; origin and improvement of varieties; individuality; characteristics; selection; culture; close breeding; cross-breeding; pollination, natural and artificial; special breeding of potato, maize, beet, cucumber, squash, strawberry, raspberry, etc. *Winter term, Junior year; 1 exercise per week. Elective.*

III. Forestry.—Relation to climate, shelter, water-shed and timber production; trees as a farm crop; nut-bearing trees; planting, care, and management of forest trees; cutting and curing;

wind-breaks, groves, and shelter belts; forest fires; diseases and enemies of forest trees; arbor day. *Winter term, Junior year; 2 exercises per week. Elective.*

IV. Pomology (Bailey).—Principles of fruit culture:—introduction; fruit lands:—location; tillage; fertilizing; planting; care; diseases, insects, and spraying; harvesting and marketing of fruits. *Spring term, Junior year; 3 exercises per week. Required of Agricultural students.*

V. Ornamental Gardening (Long).—Requirements of ornamental gardening; materials; arrangement; construction and maintenance of ornamental gardens; improving the surroundings of rural homes; the planting of trees and shrubbery; lawns; village improvement. *Spring term, Junior year; 3 exercises per week for one-half term. Required of Agricultural students.*

VI. Floriculture.—House plants; selection, care, and arrangement; conservatories; commercial floriculture; garden, field and greenhouse culture of flowering plants; bulb culture. *Spring term, Junior year; 3 exercises per week for one-half term. Required of Agricultural students.*

ENGLISH.

I. Elementary Course.—English grammar. Composition. Study of representative American authors. *Fall term; 5 exercises per week. Required of all students in the preparatory department.*

II. Lockwood's Lessons in English.—Continued study American literature. Composition. *Winter term, 5 exercises per week; Spring term, 5 exercises per week. Required of all students in the preparatory department.*

III. Rhetoric.—Text-book study and practical application rhetorical principles in illustrative readings. Fortnightly themes

2 exercises per week throughout the Freshman year. Required of all candidates for a degree. In 1898 this course will be required of the Sophomores during the Fall and Winter terms.

IV. General English Literature.—Topical study. Essays and collateral reading required. *4 exercises per week; Winter and Spring terms, Junior year. Required of all candidates for a degree.*

V. Special English Literature.—Study of special periods and authors. *2 exercises per week throughout the year. Elective; open to students who have taken courses I.–IV. or their equivalent.*

VI. Historical English.—*2 exercises per week throughout the year. Elective; open to students who have taken courses I.–V. or their equivalent.*

VII. Argumentation.—*2 exercises per week. Fall term. Open to students who have taken courses I.–IV. or their equivalent.*

VIII. Special Work in Themes.—*Throughout the year. Elective; open to students who have taken courses I.–IV. or their equivalent.*

GERMAN.

I. Elementary Course.—Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the Freshman year; 5 exercises per week. Required of all candidates for a degree who do not offer French.* In 1898 and 1899, this course will be required of all Juniors.

II. Reading of intermediate texts, composition, conversation. *—Fall term. Sophomore year; 3 exercises per week. Open to students who have taken course I. or its equivalent, and required of all candidates for a degree who do not offer French.*

III. German Classics.—History of German literature. *Winter and Spring terms; 3 exercises per week. Open to students who have taken courses I. and II.*

IV. Scientific German.—*Winter and Spring terms; 3 exercises per week. Open to students who have taken courses I.–II. or their equivalent. Candidates for a degree who do not offer French will be required to take either III. or IV.*

V. Sight-Reading.—*Throughout the year; 1 exercise per week. Elective; open to students who have taken courses I.–III. or their equivalent.*

VI. Goethe's Meisterwerke (Bernhardt).—*Fall term, 3 exercises per week. Elective; open to those who have taken courses I.–III. or their equivalent.*

VII. Study of Schiller or Heine.—*Winter term; 3 exercises per week. Elective; open to those who have taken courses I.–III. or their equivalent.*

VIII. Study of Freytag.—*Summer term; 3 exercises per week. Elective; open to those who have taken courses I.–III. or their equivalent..*

FRENCH.

I. Elementary Course.—Grammar, dictation, conversation. reading of easy prose and poetry. *Throughout the year; 5 exercises per week; Required of all students in the preparatory department and of all Freshmen not electing German and not offering French for admission.* In 1898 this course will be required of all Sophomores.

II. Reading of intermediate texts, composition, conversation.—*Fall and Winter terms, Sophomore year; 3 exercises per week. Required of all candidates for a degree who do not offer German.*

III. Scientific French.—*Spring term, Sophomore year; 3 exercises per week. Required of all candidates for a degree who do not*

IV. French Classics. History of French literature. *Throughout the year; 3 exercises per week. Elective; open to students who have taken courses I.–III.*

V. Sight-Reading.—*Throughout the year; 1 exercise per week. Elective; open to students who have taken courses I.–III.*

VI. Lyrics of the Nineteenth Century.—*2 exercises per week. Fall term. Elective; open to those who have taken courses I.–III. or their equivalent.*

VII. Study of Victor Hugo.—*Winter term, 2 exercises per week. Elective; open to those who have taken courses I.–III. or their equivalent.*

LATIN.

I. Beginner's Latin Book. Grammar. *Throughout the year; 3 exercises per week. Elective.*

II. Selections from various Latin authors or Cæsar.—*Throughout the year; 3 exercises per week. Elective.*

For further information, see Departments of Instruction p. —

EXPRESSION.

I. Elementary work in reading.—Elements of speech, articulation, and sight reading. *Throughout the Freshman year; 1 exercise per week. Elective.*

II. Reading.—The cultivation of ease and naturalness. Study of narrative poetry and prose. *Throughout the Sophomore year; exercise per week. Elective.*

III. Reading and recitations.—Study of various forms of poetry and prose. Extemporaneous speaking required during the Spring term. *Throughout the Junior year; 1 exercise per week. Elective.*

IV. Reading.—Shakespeare. Two extemporaneous speeches and one original oration required each term. One public debate during the year. *Throughout the Senior year; 1 exercise per week. Elective.*

POLITICAL SCIENCE.

I. Science of Government.—Town, County, State, and United States. Their origin, development, and practices. Critical analysis of the Constitution of the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 exercises per week. Elective.*

II. Political Economy.—Elementary course. Based on Walker's Briefer Course, and Andrews's Institutes of Economics. Lectures, recitations, discussions, readings, original problems, citations from the daily press, and essays. *Winter term, Senior year; 4 exercises per week. Elective.*

MATHEMATICS.

I. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division, of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Preparatory department; 5 exercises per week throughout the year.*

II. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Preparatory department; Fall and Winter terms; 5 exercises per week.* **In 1898 this course**

III. College Algebra (Taylor),—The theory of limits; differentiation; development of functions in series; permutations and combinations; probability. *Fall term, Freshman year; 4 exercises per week. Required of all candidates for a degree.* Elective for classes from 1899–1901, inclusive.

IV. Plane Trigonometry (Locke-Miller).—The derivation of the fundamental formulas; logarithms; the solution of right and oblique triangles; practical problems. *Winter term, Freshman year; 3 exercises per week. Required of all candidates for a degree.* In 1899 this course will be required of Sophomores.

V. Solid Geometry (Wells).—Lines and planes in space; diedral angles; polyhedral angles; polyhedrons; the cylinder, cone and sphere; measurement of the cylinder, cone and sphere; numerical examples and original demonstrations. *Spring term, Freshman year; 3 exercises per week. Required of all candidates for a degree.* In 1899 this course will be required of Mechanical Sophomores.

VI. Analytical Geometry (Loney).—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic sections; higher plane curves. *Fall and Winter terms, Junior year; 4 exercises per week. Required of students in the Mechanical, Physical, and Mathematical courses.*

VII. Calculus (Osborne).—The differentiation of algebraic, trigonometric, logarithmic, exponential, and anti-trigonometric functions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variable; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Winter and Spring terms, Junior year; and Fall term Senior year; 3 exercises per week.*

Required of students in the Mechanical, Physical, and Mathematical courses.

VIII. Curve tracing.—Lecture course. The construction and elementary properties of simple plane curves; symmetry; diameters; limits; asymptotes. *Fall term; 1 exercise per week. Elective; open to students who have completed courses III. and IV.*

IX. Synthetic Geometry (Dupuis).—The point, line, and circle; comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Winter term; 3 exercises per week. Elective; open to students who have completed courses III. and IV.*

X. Spherical and Higher Plane Trigonometry (Chauvenet).—The derivation and application of the fundamental formulas; trigonometric series; the construction of trigonometric tables. *Spring term; 3 exercises per week. Elective; open to students who have completed courses III., IV., and V.*

XI. Solid Analytical Geometry (Smith).—Theorems on the plane and the surfaces of the second degree. *Winter term; 3 exercises per week. Open to students who have completed course VI.*

XII. Advanced Calculus (Byerly).—An extension of course VII., including a further discussion of definite integrals; imaginaries, length of curves, areas, volumes, and the elements of elliptic integrals. *Spring term; 3 exercises per week. Elective; open to students who have completed course VII.*

XIII. Analytical Mechanics.—*Fall term; 3 exercises per week. Elective; open to students who have completed course VII.*

(Withdrawn for the year 1898–9.)

XIV. Courses in Projective Geometry, Modern Analytical Geometry, Differential Equations, Theory of Equations, Theory of Functions, will be arranged as demand for them arises.

(Withdrawn for the year 1898–9.)

ASTRONOMY.

I. Physical Astronomy.—Lecture course, illustrated with copious lantern slides, observations with a four-inch telescope, and laboratory work with the sun spectrum and the spark spectrum, sufficient to give an insight into modern methods of astronomical work. *Spring term; 3 exercises per week. Elective; open to students who have completed Mathematics III., IV., and V.*

(Withdrawn for the year 1898–9.)

II. Practical Astronomy.—The use of instruments; the determination of time, of latitude, of longitude. *Spring term; 3 exercises per week. Elective; open to students who have completed Mathematics VII. and X.*

(Withdrawn for the year 1898–9.)

CIVIL ENGINEERING.

I. Plane Surveying (Carhart).—Elementary course, field work, recitation and plotting. Use of compass, transit and levels; adjustment of instruments; stadia surveying. *Spring term, Sophomore year; 1 exercise per week of classroom work, 2 exercises of three hours each of field work per week. Required of Agricultural students.*

II. Road Construction and Leveling (Spalding).—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term, Junior year; 3 exercises of text book work and 1 exercise of three hours of field work per week. Required of students in the Agricultural course.*

III. Civil Engineering.—A continuation of course II., embracing land, topographic and railroad surveying, the study of the use of engineer's tables, and practice in overseeing under-classmen beginning the subject. *Fall and Spring term; 2 exercises of* *two hours each week. Elective; open to students who have completed course II.*

MECHANICS.

I. Strength of Materials (Merriman).—Strength of wood, steel, alloys, stone, brick and cements. *Spring term, Junior year ;* recitations, *3 exercises per week,* laboratory work, *1 exercise of 2 hours per week. Required of Mechanical students.*

II. Mechanism (Lectures).—Rectilinear motion; rotary motion; transmission of motion. *Spring term, Junior year ; 2 exercises per week. Required of Mechanical students.*

III. Mechanics of Engineering (Church).—Bodies in equilibrium and in motion; work and power; friction of rest and motion; strength of simple beams, continuous beams, pipes and columns, arches. Recitations. *Fall term, Senior year ; 5 exercises per week ; Winter term, Senior year ; 4 exercises per week.* Graphi statics, hydraulics and water-wheels. *Spring term, Senior year 5 exercises per week. Required of Mechanical students.*

IV. Steam Engineering (Kinealy).—Study of steam and i properties; simple and compound engines; steam boilers. *Fal term, Senior year ; 3 exercises per week. Elective.*

V. Metallurgy (Huntington).—Study of the manufacture o cast iron, wrought iron, and steel; rolling-mill machinery; metallurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year ; 3 exercises per week. Elective.*

VI. Mechanical Drawing.—*Winter term, Sophomore year ; exercise of 2 hours per week. Required of Agricultural students.*

VII. Mechanical Drawing.—*Spring term, Freshman year ; 1 exercise of 2 hours per week. Required of Agricultural students.*

VIII. Mechanical Drawing (Anthony).—*Throughout the Sopho-*

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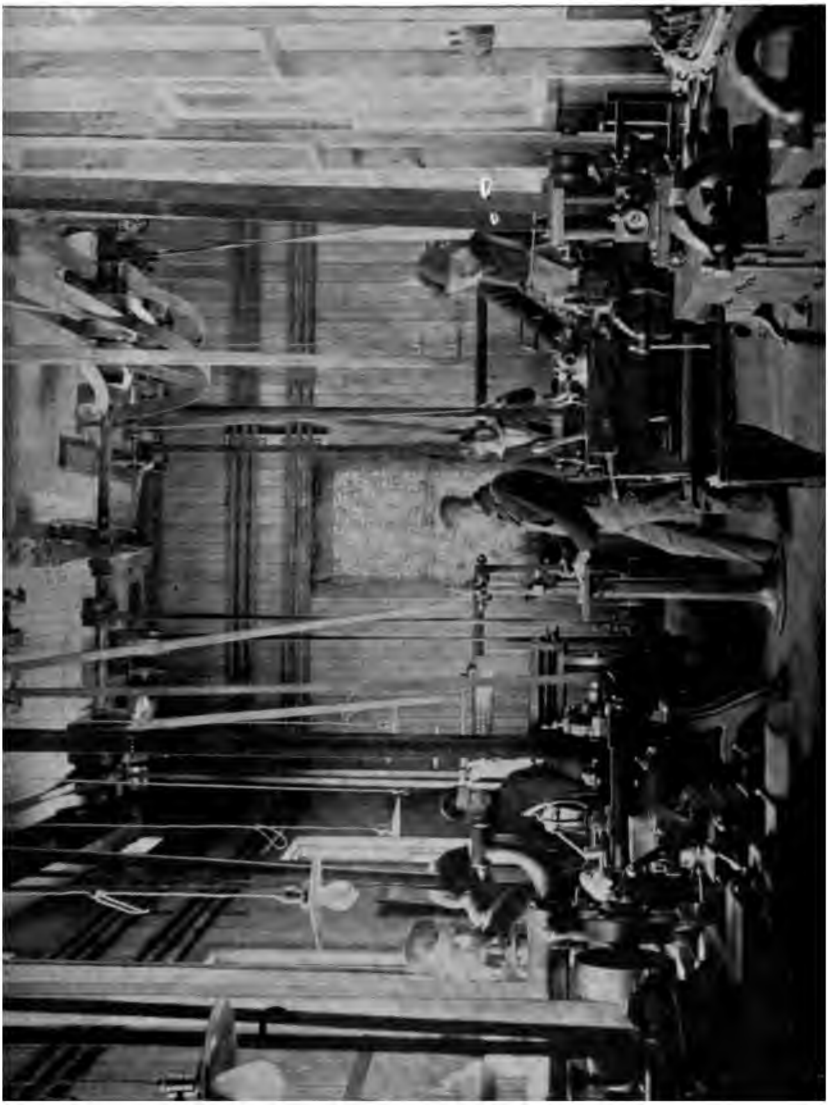

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more year; 2 exercises of 2 hours each per week. Required of Mechanical students.

IX. Mechanical Drawing.—*Throughout the Junior year; 2 exercises of two hours per week. Required of Mechanical students.*

X. Mechanical Drawing.—Machine drawing and design. *Fall and Winter terms, Senior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

XI. Mechanical Drawing.—*Winter term, Freshman year; 1 exercise of 2 hours per week. Spring term, Freshman year; 2 exercises of 2 hours per week. Required of Mechanical students.*

XII. Descriptive Geometry (Faunce).—Notation and elementary principles; problems on the point, line and plane; problems relating to the cylinder, cone and double curved surface of revolution; intersection and development of planes and solids; practical problems. *Fall term, Junior year; 3 exercises per week. Required of Mechanical students.*

XIII. Wood-working.—Use of tools, bench work and carpentering. *Winter term, Freshman year; 2 exercises of 3 hours each per week. Required of all Agricultural students.*

XIV. Wood-working.—*Winter term, Freshman year; 2 exercises of 3 hours each and 1 exercise of 2 hours per week. Required of Mechanical students.*

XV. Wood-turning.—*Fall term, Sophomore year;* shop-work, *2 exercises of 3 hours each per week. Required of Mechanical students.*

XVI. Pattern-making.—Principles of moulding and casting. *Spring term, Sophomore year;* shop-work, *1 exercise of 3 hours per week. Required of Mechanical students.*

XVII. Wood-turning and Pattern-making.—*Spring term,* *Freshman year; 2 exercises of 3 hours each and 1 exercise of 2 hours per week. Required of Mechanical students.*

XVIII. Forging.—*Fall term, Sophomore year;* **shop-work,** *1 exercise of 3 hours per week. Required of* ***Agricultural students***

XIX. Iron-work.—Forging, drawing, bending, **welding** and tool-dressing. *Winter term, Sophomore year;* **shop-work,** ***2 exercises*** *of 3 hours each per week. Required of* ***Mechanical students.***

XX. Constructions, and Estimates of Cost.—***Winter term,*** *Sophomore year;* shop-work and lectures, *2* ***exercises of 2 hours*** *each per week. Required of Agricultural students.*

XXI. Wood-carving.—Care and use of tools, **geometrical** motives, diaper patterns, incised carving, flat and **curved surface** carving, historic ornament, low relief and high relief. ***Elective*** *throughout the course; 1 exercise of 3 hours per week.*

XXII. Machine-shop Practice.—*Fall term,* ***Junior year;*** **shop-work,** *2 exercises of 3 hours per week. Required of* ***Mechanical*** *students.*

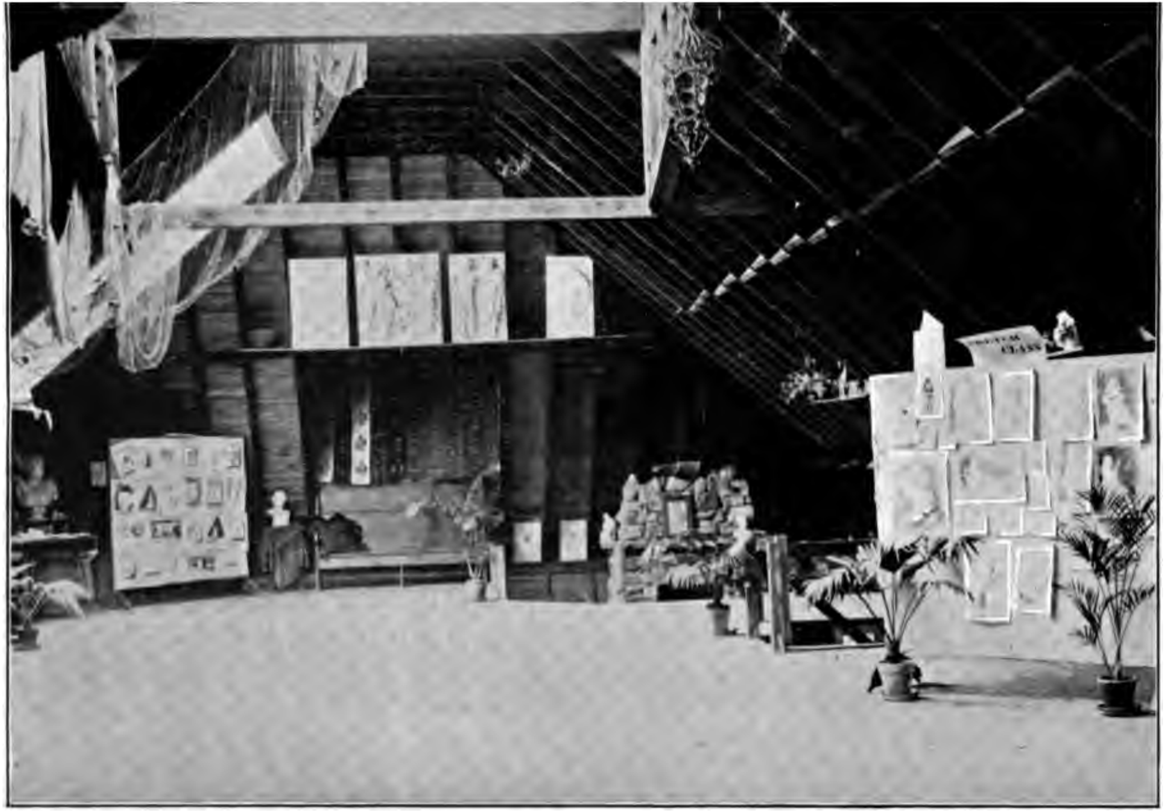
XXIII. Machine-shop Practice.—*Winter and* ***Spring terms,*** *Junior year; 1 exercise of 3 hours per week.* ***Required of Mechanical students.***

XXIV. Machine Construction.—*Throughout the* ***Senior*** *year;* shop-work, *2 exercises of 3 hours each per week.* ***Required*** *of Mechanical students.*

XXV. Engineering Conferences.—Subjects chosen **by the class.** *Spring term, Senior year; 2 exercises per week.* ***Required*** *of Mechanical students.*

DRAWING AND MODELING.

I. Freehand Drawing.—Drawing from **objects. Memory** sketches required. *Fall term, Freshman year;* ***1 exercise of 2*** *hours per week. Required of all candidates for a degree.*



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II.—III. Drawing in charcoal from still life and the cast.—*Fall term, Sophomore year; 1 exercise of 2 hours per week. Required of all candidates for a degree. Spring term, Sophomore year; 1 exercise of 2 hours per week. Elective; open to students who have taken course I.*

IV. Drawing from life or the cast, and painting in oil, pastel, or water color.—*Fall and Spring terms, Junior and Senior years; 2 exercises of 2 hours each per week. Elective; open to students who have taken courses I. and II.*

V. Sketch Class.—Rapid sketching from life. *1 exercise of 1 hour per week. Elective throughout the course. In the Junior and Senior years 2 exercises per week may be taken.*

VI. Modeling from objects and casts.—*Fall term, Junior and Senior years. Elective; open to all courses.*

VII. History of Art.—Reading and lectures. *Spring term, Junior and Senior years; 1 exercise of 1 hour per week. Elective; open to all courses.*

COURSE OF STUDY

OF THE

R. I. College of Agriculture and Mechanic Arts, for the Classes of 1899 to 1901, inclusive.

SOPHOMORE YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Physics, I	4	Physics, I	4
Agriculture, VI	2	English, III	2
Agriculture, VII	3	French, I	3
English, III	2	Mathematics, II	5
French, I	3	Mechanics, VIII	2
Mathematics, II	5	Mechanics, XV	2
Mechanics, XVIII	1	Drawing, II	1
Drawing, II	1	Military Drill and Tactics, I	3
Modeling, IV	1		
Military Drill and Tactics, I	3		

***Electives**—Latin I., II. Mathematics, VII. Mechanics, XXI. Expression, II.

WINTER TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Physics, I	4	Physics, I	4
Botany, I	4	English, III	2
English, III	2	French, I	3
French, I	3	Mathematics, IV	3
Mathematics, IV	3	Mechanics, VIII	2
Mechanics, VI	1	Mechanics, XIX	2
Mechanics, XX	2	Military Drill and Tactics, I	3
Military Drill and Tactics, I	3		

Electives—Latin, I., II. Mechanics, XXI. Expression, II. Mathematics, VIII.

SPRING TERM.

Agricultural Course.	Exercises per week.	Mechanical Course.	Exercises per week.
Chemistry, I	4	Chemistry, I	4
Physics, I	4	Physics, I	4
Botany, I	4	French, I	3
French, I	3	Mathematics, V	3
Civil Engineering, I	3	Mechanics, VIII	2
Military Drill and Tactics, I	3	Mechanics, XVI	1
		Military Drill and Tactics, I	3

Electives—Latin, I., II. Mathematics, IX. Mechanics, XXI. Drawing, III. Expression, II. Physics, V.

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* A student may elect work offered to a lower class or to the other division of his own class.

JUNIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	**Mechanical Course.**	Exercises per week.
Chemistry, II	3	Chemistry, II	3
Chemistry, III	2	Chemistry, III	2
German, I	3	German, I	3
Civil Engineering, II	4	Mathematics, VI	4
Botany, II	3	Mechanics, XII	3
Horticulture	4	Mechanics, IX	2
Military Drill and Tactics, I	3	Mechanics, XXII	2
		Military Drill and Tactics, I	3

Electives—Physics, II. French, II. Latin, I., II. Mechanics, XXI. Drawing, IV., VI. Expression, III.

WINTER TERM.

Chemistry, III	2	Chemistry, III	2
Chemistry, IV	4	English, IV	4
English, IV	4	German, I	3
German, I	3	Mathematics, VI	4
Agriculture, XXI	5	Mathematics, VII	3
Military Drill and Tactics, I	3	Mechanics, IX	2
		Mechanics, XXIII	1
		Military Drill and Tactics, I	3

Electives—Physics, II. Botany, III., IV. Horticulture. French, II. Latin, I., II. Mechanics, XXI. Military Drill and Tactics, III. Expression, III. Mathematics, X.

SPRING TERM.

English, IV	4	English, IV	4
German, I	3	German, I.	3
Chemistry, VI	3	Mathematics, VII	3
Chemistry, VII	2	Mechanics, IX	2
Zoölogy, I	3	Mechanics, II	2
Agriculture, XXI	2	Mechanics, I.	4
Military Drill and Tactics, I	3	Mechanics, XXIII	1
		Military Drill and Tactics, I	3

Electives—Physics, II., IV., VI. Botany, III., IV., V. Horticulture. French, II. Latin, I., II. Mechanics, XXI. Drawing, IV., VII. Expression, III. Mathematics, XIII.

*SENIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	**Mechanical Course.**	Exe per
Chemistry, VI	2	Mathematics, VII	
Physiology, I	4	Mechanics, III	
Agriculture, VIII	3	Mechanics, XXIV	
Military Drill and Tactics, I	3	Mechanics, X	
		Military Drill and Tactics	

Electives—Chemistry, V., VIII. Physics, II. Botany, III., IV. Horticult English, V. German, II., V. Latin, I., II. French, II., IV., V. Poli Science, I. Mathematics, XI. Mechanics, XXI. Drawing, IV., VI. Zoöl II., III., IV. Expression, IV. Civil Engineering, III.

WINTER TERM.

Physiology, I	3	Mechanics, III	
Geology, I	2	Mechanics, X	
Agriculture, X	2	Mechanics, XXIV	
Horticulture	3	Military Drill and Tactics, I	
Military Drill and Tactics, I	3		

Electives—Chemistry, VIII., IX. Physics, II. Botany, III., IV. Agricultu XI. Horticulture. English, V. German, III., IV., V. Latin, I., II. Fren II., IV., V. Political Science, II. Mathematics, XII., XIV. Mechanics, X Military Drill and Tactics, III. Expression, IV. Zoölogy, III., V.

SPRING TERM.

Veterinary Science, I	4	Mechanics, III	
Agriculture, XXII	1	Mechanics, XXIV	
Horticulture	2	Mechanics, XXV	
Military Drill and Tactics, I	3	Military Drill and Tactics, I	

Electives—Chemistry, VIII., IX. Physics, II., III., IV. Botany, III., IV., Agriculture, XVIII. English, V. German, III., IV., V. Latin, I., II. Frenc III., IV., V. History, IV. Mathematics, XII., XIV. Astronomy, I., II. M chanics, XXI. Drawing, IV., VII. Expression, IV. Civil Engineering, I Zoölogy, III., IV. Psychology, I.

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*The equivalent of 15 hours of recitation per week is required.

THE PREPARATORY DEPARTMENT

OF THE

R. I. College of Agriculture and Mechanic Arts.

Students in the preparatory department may select from the following such courses as may be necessary. To complete this course will take from one to two years, depending upon the proficiency of the candidates.

The object of this course is to prepare students from the country schools for the college courses in Agriculture and Mechanic Arts.

FALL TERM.		WINTER TERM.	
English Grammar	5	Lockwood's Lessons in English	5
Elementary French	5	Elementary French	5
American History	3	American History	3
Algebra	5	Algebra	5
Plane Geometry	5	Plane Geometry	5

SPRING TERM.	
Lockwood's Lessons in English	5
Elementary French	3
American History	3
Algebra	5

Students in the preparatory department may take, together with the regular studies of this course, any other work from the college courses for which they are prepared, and which is possible with the arranged schedules.

For example, students desiring special work in Agriculture or Mechanics, who are not prepared to enter the regular courses leading to a degree, may combine with work in the preparatory department such courses in Agriculture and Mechanics as may fit their especial needs. The successful completion of such a special course will lead to a certificate covering the work completed.

The Courses of Study Leading to a Degree.

FRESHMAN.

FALL TERM.

Physiography	4
Elementary Physics	4
College Algebra	4
Rhetoric	2
French or German	5
Freehand Drawing	1

WINTER TERM.

Agricultural Course.		Mechanical Engineering, and Physical and Mathematical Courses.		Chemical, Biological, and Preparatory Medical Course.	
Elementary Physics	3	Elementary Physics	3	**Elementary Physics**	**3**
Plane Trigonometry	3	Plane Trigonometry	3	**Plane Trigonometry**	**3**
Rhetoric	2	Rhetoric	2	**Rhetoric**	**2**
French or German	5	French or German	5	**French or German**	**5**
Biology of Plants	3	Mechanical Drawing	1	**Biology of Plants**	**3**
Agricultural Mechanics	2	Woodworking	3	**Elective**	**3**

SPRING TERM.

Elementary Physics	3	Elementary Physics	3	**Elementary Physics**	**3**
Solid Geometry	3	Solid Geometry	3	**Solid Geometry**	**3**
Rhetoric	2	Rhetoric	2	**Rhetoric**	**2**
French or German	3	French or German	3	**French or German**	**3**
Biology of Plants	3	Mechanical Drawing	2	**Biology of Plants**	**3**
Agriculture 1: introduction to Agriculture	2	Woodturning and Pattern-making	3	**Elective**	**3**

SOPHOMORE.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Chemistry	4	Chemistry	4
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Plane Surveying	3	Analytical Geometry	4
Botany: weeds and fodder plants	3	Mechanical Drawing	2
Agriculture II. and III.: soils and drainage	2	Moulding	2

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing 1.

WINTER TERM.

Chemistry	5	Chemistry	5
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Animal Biology	3	Analytical Geometry	4
Agriculture IV.: agricultural apparatus and constructions	3	Mechanical Drawing	1
Forging	1	Forging	2

Electives open to all courses—Photography, 1: Synthetic Geometry, 3.

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Animal Biology	3	Descriptive Geometry	3
Agriculture V.: fertilization	2	Mechanical Drawing	2
Surveying: leveling and topographical	2	Applied Electricity	3
Mechanical Drawing	2	Surveying: leveling and topographical	2

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3;

SOPHOMORE.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.		Chemical, Biological, and Preparatory Medical Courses.	
Chemistry	4	Chemistry	4
Advanced English	2	Advanced English	2
German or French	3	German or French	2
Analytical Geometry	4	Biology of Plants	3
Advanced Physics: thermometry, thermodynamics, sound and telephony	3	Elective	6

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing, 1.

WINTER TERM.

Chemistry	5	Chemistry	5
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Analytical Geometry	4	Animal Biology	3
Advanced Physics: optical phenomena and instruments	3	Elective	3

Electives open to all courses—Photography, 1; Synthetic Geometry, 3.

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Descriptive Geometry	3	Animal Biology	3
Advanced Physics: electricity and magnetism	3	Thoretical Chemistry	3
Theoretical Chemistry	3	Inorganic Preparations	3

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3;
Spherical and Higher Plane Trigonometry, 3,

JUNIOR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
Organic Chemistry	3	General English Literature and History	2
General English Literature and History	2	Analytical Chemistry	2
Analytical Chemistry	3	Calculus	4
Zoölogy	3	Mechanical Drawing	2
Agriculture: field and garden crops	3	Machine Shop	3
Economic Fungi (required in alternate years.)	3	Elective (Metallurgy, Mechanism).	4

Electives open to all courses.—Free-hand Drawing, 4; Sketch Class, 1 or 2; Modeling, 2.

WINTER TERM.

General English Literature and History	2	General English Literature and History	2
Comparative Anatomy	3	Calculus	4
Agricultural Chemistry	3	Machine Design	2
Quantitative Analysis: gravimetric and volumetric	3	Machine Shop	3
Horticulture II.: market-gardening and greenhouse	3	Thermo-dynamics and Steam-engine	3
Elective	3	Elective	3

Elective open to all courses—Solid Analytical Geometry, 3.
Plant-breeding, 1. Forestry, 2.

SPRING TERM.

General English Literature and History	2	General English Literature and History	2
Comparative Anatomy	3	Machine Design	2
Agricultural Chemistry	3	Machine Shop	3
Horticulture V.: pomology	3	Engineering Laboratory	1
Horticulture VI.: ornamental gardening	3	Steam Boilers	2
Elective	3	Elective (Surveying, Photography, Materials of Construction.)	3

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1 or 2; History of Art, 1
Advanced Integral Calculus, 3. Floriculture, 3.

JUNIOR.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.		Chemical Course.		Biological, and Preparatory Medical Course.	
General English Literature and History	2	Organic Chemistry	3	Organic Chemistry	3
Analytical Chemistry	2	General English Literature and History	2	Zoölogy	3
Advanced Physics: electrical measurements and testing of instruments	3	Analytical Chemistry	3	General English Literature and History	2
Calculus	4	Volumetric Analysis	2	Analytical Chemistry	3
Elective	6	Elective	6	Volumetric Analysis	3
				Elective (Scientific French or German.)	3

Given in alternate years—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

Physical and Mathematical Courses.		Chemical Course.		Biological, and Preparatory Medical Course.	
General English Literature and History	2	Organic Chemistry	3	General English Literature and History	2
Calculus	4	General English Literature and History	2	Comparative Anatomy	3
Advanced Physics: direct current, construction of dynamos and motors, tests of efficiency	3	Sanitary Chemistry	3	Sanitary Chemistry	3
Elective	8	Quantitative Analysis (gravimetric)	3	Quantitative Analysis	3
		Mineralogy and blowpipe	3	Organic Chemistry	3
		Elective	3	Elective (Scientific French or German.)	3

Elective open to all courses—Solid Analytical Geometry, 3.

SPRING TERM.

Physical and Mathematical Courses.		Chemical Course.		Biological, and Preparatory Medical Course.	
General English Literature and History	2	General English Literature and History	2	General English Literature and History	2
Advanced Physics: alternating current, manipulation of alternators, transformers	3	Organic Chemistry	3	Comparative Anatomy	3
Elective	12	Industrial Chemistry	3	Comparative Invertebrate Zoölogy	3
		Quantitative Analysis (gravimetric)	3	Elective	9
		Elective	6	(Scientific French or German, 3; Organic Chemistry.)	

Electives open to all courses—Scientific French or German, 3; Organic Chemistry, 3.

SENIOR.

FALL TERM.

Agricultural Course.

Veterinary Science	3
Agricultural Chemistry	3
Agriculture VI.: Breeds of farm animals	3
VII.: Live stock husbandry	3
VIII.: History of agriculture, (elective)	2
Economic Fungi (required in alternate years.)	3

Mechanical Course.

Applied Mechanics	5
Steam-Engine Design	3
Engineering Laboratory	3
Power Transmission	3
Chemical Engineering	3
Analytical Mechanics	3

Electives open to all courses—Free-hand Drawing, 4; Argumentation, 2; Advanced English Literature, 3; Modeling, 2; Sketch Class, 1 or 2; Orations and Essays, 1.

WINTER TERM.

Agricultural Chemistry	3
Agriculture IX.: Feeding farm animals	3
X.: Dairy Husbandry	3
XI.: Poultry farming	2
XII.: Agricultural economics	2
XIII.: Agricultural and horticultural literature	2

Applied Mechanics	5
Steam-Engine Design	3
Engineering Laboratory	3
Wool and Cotton Machinery	3
Specifications and contracts	3
Inspection excursions	
Thesis work	

Electives open to all courses—Solid Analytical Geometry, 3; Advanced English Literature, 3; Orations and Essays, 1.

SPRING TERM.

Agricultural Chemistry	3
Economic Entomology	2
Agriculture XIV.: Farm management	5
XV.: Farm accounts and records	1
XVI.: Farm law	1
XVII.: Apiculture	1
XVIII.: Agricultural debate	2
XIX.: Agricultural experimentation	2

Hydraulics	5
Mill and factory designs	3
Engineering Laboratory	3
Wool and cotton machinery	3
Specifications and contracts	3
Inspection excursions	
Thesis work	

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1 or 2; History of Art, 1; Analytical Mechanics, 3; Orations and Essays, 1; Advanced English Literature, 3.

SENIOR.—*Continued.*

FALL TERM.

Physical and Mathematical Courses.		Chemical Course.		Biological and Preparatory Medical Course.	
Projective Geometry	3	Organic Chemistry	3	* Bacteriology	3
Advanced Physics: wiring of buildings, switch-boards, systems of regulation, subways	3	Textile Coloring	3	Civil Government	3
Modern Methods in Analytics	3	Agricultural Chemistry	3	Scientific French or German	3
Heating and Ventilation of Buildings	3	Gas Analysis	3	Organic Chemistry	3
Analytical Mechanics	3	Physiological Chemistry	3	Physiological Chemistry	3
		Thesis work		Elective	3

* If not taken the previous year.

Given in alternate years—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

Differential Equations	3	Organic Chemistry	3	Psychology	3
Theory of Functions	3	Textile Coloring	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Advanced Physics: photometric and electric tests of lamps, safety and distributing devices	3	Physiological Chemistry	3	Elective	9
Inspection excursions		Electro-Chemistry	3		
Thesis work		Thesis work			

Electives open to all courses—Solid Analytical Geometry, 3; Advanced English Literature, 3; Orations and Essays, 1.

SPRING TERM.

Differential Equations	3	Organic Chemistry	3	Economic Entomology, elective	2
Theory of Functions	3	Textile Fabrics and Machinery, with excursions to manufactories	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Methods of Teaching Mathematics	1	Physiological Chemistry	3	Elective	12
Advanced Physics: traction work and transmission of power	3	Thesis work		(In Botany and Zoölogy individual arrangements are to be made with heads of departments.)	
Inspection Excursion					
Thesis work					

FOR the benefit of persons within the state who cannot attend the college as students, the faculty has arranged a course of study, known as the Agricultural College Extension. The plan, which is similar to that of the Chautauqua Reading Circle, provides a course of study embodying lines in agriculture and horticulture, as well as studies in literature and the sciences.

The course of study is designed to meet the requirements of anyone who may chose to pursue it. To complete the course, a satisfactory examination on at least one book under each number of the three years' course, given below, must be passed.

Candidates upon completing the course will receive the award of a diploma.

COURSE OF STUDY.

FIRST YEAR.

		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	**First Principles of Agriculture.** *Voorhees*	$ 72	$ 72	$ 08
	American Literature. *Hawthorne and Lemmon* . . .		1 12	10
2.	**Home Floriculture.** *Rexford*	1 50	1 20	08
	Silo, Ensilage, and Silage. *Miles*	50	38	04
	Helps for Home Makers. *Mary Blake*.	75	56	08
3.	**Insects and Insecticides.** *Weed*	1 25	1 00	08
	The Human Body (Briefer Course). *Martin*.		1 20	10
4.	**Feeding Animals.** *Stewart*	2 00	1 60	12
	American History. *Montgomery*.		1 00	11
5.	**Manual of the Constitution.** *Andrews*.		1 00	08

SECOND YEAR.

		Publisher's Price.	Price to Members of the Extension.	
	Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$
	Representative English Literature. *Pancoast*		1 60	
.	Text-Book of Botany			
	Horses, Cattle, Sheep and Swine. *Curtis*	2 00	1 60	1
	Ornamental Gardening for Americans. *Long.*	2 00	1 50	08
3.	How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
	How to Make the Garden Pay. *Greiner*	2 00	1 60	12
	Profitable Poultry Keeping. *Beale*	1 50	1 12	08
	Anna Maria's Housekeeping. *Power.*	75	56	08
4.	Stock Breeding. *Miles*	1 50	1 12	12
	English History. *Montgomery*		1 12	1
5.	Political Economy (Briefer Course). *Walker.*		1 00	0
	Astronomy. *Newcomb*		1 30	1

THIRD YEAR.

1.	Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$
	General History. *Meyers*		1 50	
2.	A Text-Book of Chemistry			
	The Nursery Book *Bailey*	1 00	80	
	Drainage for Profit and Health. *Waring*	1 50	1 12	
3.	Langstroth on the Hive and Honey Bee. (Dadant's Revision)		1 12	
	American Fruit Culturist. *Thomas*	2 50	2 00	
	American Dairying. *Gurler*	1 00	80	
4.	Green-House Construction. *Taft*	1 50	1 20	
	Horse Breeding. *Sanders*	2 00	1 50	
	Our Farming. *Terry.*	2 00	1 60	
	English translations from a foreign literature. (Books will be recommended later according to the subject chosen.)			
5.	The New Womanhood. *Fernald*	1 25	9	
	Advanced Course in Political Economy. *Walker.*		2	
	Soils and Rocks. *Stockbridge*	2 50	2	

SUPPLEMENTARY READING.

Below is a list of books which the faculty recommends as reading supplementary to the above course; the same is suggested as a desirable list of books for the home, grange or town library.

	Publisher's Price.	Price to Members.	Postage.
Agriculture (3 vols). *Storer*	$5 00	$5 00	$ 36
Talks on Manures. *Harris*	1 75	1 31	08
Practical Dairy Husbandry. *Willard*	3 00	2 00	16
The Grasses of North America. (Vol. I.) *Beal*	2 50	2 25	10
" " " (Vol. II.) *Beal*	5 00	4 50	29
Turkeys and how to Raise Them. *Myrick*	1 00	75	07
The Spraying of Plants. *Lodeman*	1 00	80	07
Plant Breeding. *Bailey*	1 00	80	07
Soils. *King*	75	60	05
Manures, How to Make and How to Use Them. *Burpee.*	50	38	08
The Earth and its Story. *Heilprin*	1 00	1 00	08
Fungi and Fungicides. *Weed*	1 00	75	07
Survival of Unlike. *Bailey*	2 00	1 60	10
Horticultural Rule Book. *Bailey*	75	60	06
Rural Grape Training. *Bailey*	75	65	04
Vegetable Gardening. *Greene*			
The Farmer's Veterinary Adviser. *Law.*	3 00	2 40	16
Plant Life on the Farm. *Masters*	1 00	75	06
The Sheperd's Manual. *Stewart*	1 50	1 12	11
Harris on the Pig. *Harris*	1 50	1 12	08
Practical Poultry Keeping. *Wright*	2 00	1 50	12
The Book of Poultry. *Wright.*	5 00	3 75	24
Colored Plates.	12 50	9 38	32
How Crops Feed. *Johnson*	1 50	1 12	11
How Crops Grow. *Johnson*	1 50	1 12	11
A B C of Bee Culture. *Root*	1 25	1 00	12
A Modern Bee Farm. *Simmins*			
Bees and Bee-Keeping. (2 vols.) *Cheshire*			
The Production of Comb Honey. *Hutchinson*		25	
The Production of Extracted Honey. *Cowan*			
The Incubator and its Use. *Rankin*			
Poultry for Profit. *Jacobs*			

	Publisher's Price.	Price to Members.	Postage.
Incubators and Brooders. *Jacobs*			
Natural and Artificial Duck Raising. *Rankin*			
Poultry. (A Treatise on raising Broilers and Ducks by Artificial Means.) *McFetridge*			
Hand-book of Plants. *Henderson*	$4 00	$3 20	$ 28
Flowers, Fruits, and Leaves. *Sir John Lubbock*			
How to Know the Wild Flowers. *Dana*		1 50	Free.
Origin of Species. *Darwin*	2 00	1 50	14
Animals and Plants under Domestication. (2 vols.) *Darwin*	5 00	3 75	28
The American Commonwealth. *Bryce*		3 50	Free.
Letters to a Daughter. *Starrett*	75	60	06
How the Other Half Live. *Riis*		1 25	06
Amenities of Home	60	45	05
How to Win. *Frances E. Willard*	1 00	75	07
New England Legends and Folk Lore. *Drake*	2 00	1 50	12
A Nameless Nobleman *Jane Austin*	1 25	94	08
Dr. LeBaron and his Daughter. *Jane Austin*	1 25	94	08
Standish of Standish. *Jane Austin*	1 25	94	08
Betty Alden. *Jane Austin*	1 25	94	08
Half Hours with American History. (2 Vols.) *Morris*	3 00	2 25	24
Masterpieces of American Literature		1 00	08
Riverside Literature Series		15	Free.
A Short History of the English People. *Green*		1 20	15
Student's History of England. *Gardiner*		3 00	15
Readings from English History. *J. R. Green*	1 50	1 12	12
English Classic Series		12	Free.
Public Opinion (Periodical)			

Any of the above books may be bought of The Rhode Island News Company, 113 and 115 Westminster Street, Providence, by members of the Extension Course, at the special price given.

Further information regarding the course may be obtained by consulting Part I. of the 1896 report or by writing to the address below.

J. D. TOWAR,
Sec. Agr. College Extension,
Kingston, R. I.

ARTILLERY DRILL.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX
TILDEN FOUNDATIONS

MILITARY ORGANIZATION.

COMMANDANT,

W. W. Wotherspoon, Captain Twelfth Infantry, U. S. A.

COMPANY A.

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F. Harley	Second Lieutenant.
. Wright	First Sergeant.
. Kenyon	Sergeant.
. Congdon	Sergeant.
. Rose	Sergeant.
. Doughty	Sergeant.
F. W. Arnold	Corporal.
C. Phillips	Corporal.
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. Case	Sergeant.
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. Bosworth	Sergeant.
F. Owen	Sergeant.
Knowles	Corporal.
. Soule	Corporal.
Knowles	Corporal.
Pearson, Jr.	Corporal.

ut. W. F. Harley	Battalion Adjutant.
W. Case	Bugler.

BOTANICAL CLUB.

IN CHARGE OF THE PROFESSOR OF BOTANY.

Those interested in botanical subjects meet occasionally to discuss the local flora and simple botanical literature.

ZOÖLOGICAL CLUB.

The Zoölogical Club meets bi-weekly for the study of the local fauna, for the presentation of brief papers, and for the review of current journals. A special room is devoted to the collections and preparations made by the club. The daily observations by the members upon the occurrence, habitat, structure, life history and habits of the animals, are on file for ready reference. Special excursions are made to favorable localities. Opportunities for field work in zoölogy are remarkably fine.

OFFICERS.

C. B. MORRISON	President.
A. PEARSON, JR.	Vice-President.
H. KNOWLES	Secretary.
E. PAYNE	Curator.

CHEMICAL CLUB.

e Chemical Club meets once in two weeks for the purpose of ıssing the literature upon chemical, physical, and agricultural ects. The French, German, and English journals are distrib- l among the members, and reports are received from time to e on subject matter from thirty-five different journals.

OFFICERS.

Arles F. Kenyon	President.
J. E. Bucher	Vice-President.
F. W. Arnold	Secretary.

RELIGIOUS ORGANIZATIONS.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

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H. D. Smith	Treasurer.

YOUNG WOMEN'S CHRISTIAN UNION.

M. W. Harvey	President.
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HOWLAND BURDICK, President.

GEORGE A. RODMAN, Secretary, Woonsocket, R. I.	CHARLES L. SARGENT, Treasurer, Peacedale, R. I.

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ge Edward	Rocky Brook,	R. I.
elaide Maria	Kingston,	"
hie Franklin	Middletown,	"
hn Edward	Jamestown,	"
rude Maie	Peace Dale,	"
les Franklin	Shannock,	"
uis Herbert	Franklin,	N. Y.

GRADUATES OF 1897.

Velcome Sands, Sci	Shannock,	R. I.
Edwards Brown, Mech.	Pawtucket,	"
ie Franklin, Mech	Middletown,	"
rude Maie, Sci	Peace Dale,	"
e Bailey, Sci	Quonochontaug,	"
e Louise, Sci	Westerly,	"
les Franklin, Mech	Shannock,	"
rt Prentice, Mech	Ashaway,	"
uis Herbert, Mech	Franklin,	N. Y.
lice, Sci	Allenton,	R. I.
g, Mech	Lafayette,	"

SENIORS.

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ge Washington, Agr	Shannock,	"
Maria, Sci	Abbott Run,	"
ter, Agr	Gould,	"
m Case, Jr., Sci	Wakefield,	"

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Flagg, Martha Rebecca, Sci	Kingston,	"
Harley, William Ferguson, Agr	Pawtucket,	"
Rose, George Tucker, Agr	Kingston,	"
Taylor, William James, Sci	Mendon,	Mass.
Turner, Harriette Florence, Sci	Ontario Centre,	N. Y.
Wilson, Grace Ellen, Sci	Allenton,	R. I.

JUNIORS.

Allen, Nathaniel Bertram, Agr	Pawtuxet,	R. I.
Arnold, Henry Francis Walling, Mech	Woonsocket,	"
Arnold, Everett Mullen, Sci	Wood River Junc.,	"
Bosworth, Alfred Wilson, Sci	Boston,	Mass.
Cargill, James Edward, Mech	Abbott Run,	R. I.
Cumming, John Stuart, Mech	Pawtucket,	"
Harvey, Mildred Wayne, Sci	Allenton,	"
Kenyon, Blydon Ellery, Agr	Wood River Junc.,	"
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Knowles, Harry, Agr	Point Judith,	"
Ladd, Merrill Augustus, Mech	Bay Shore,	N. Y.
Owen, William Frazier, Mech	Cannonsville,	"
Payne, Ebenezer, Sci	Lyons Farms,	N. J.
Phillips, Walter Clark, Mech	Lafayette,	R. I.
Pierce, Nellie Hollis, Sci	Malden,	Mass.
Reynolds, Robert Spink, Mech	Wickford,	R. I.
Rice, Minnie Elizabeth, Sci	Wickford,	"
Sherman, Abbie Gertrude, Sci	Kingston,	"
Sherman, George Albert, Mech	West Kingston,	"
Thompson, Sally Rodman, Sci	Wakefield,	"
Wells, Grace Perry, Sci	Kingston,	"

SOPHOMORES.

Brightman, Henry Maxon, Mech	Westerly,	R. I.
Cross, Charles Clark, Mech	Narragansett Pier,	"

rton Robinson, Mech	Wakefield,	R. I.
ohn Raleigh, Mech	Kingston,	"
rtrude Sarah, Sci	Peace Dale,	"
James, Mech	East Greenwich,	"
nold Theodore, Mech	Newport,	"
th Hortense, Sci	Kenyon,	"
rah Lila, Sci	Kenyon,	"
arles Andrew, Mech	Providence,	"
Amos Langworthy, Agr	Wood River Junc.,	"
Leroy Weston, Agr	Point Judith,	"
thur Earle, Agr	Quonochontaug,	"
Abbie Fidelia, Sci	Wickford,	"
Alfred, Jr., Sci	Newburyport,	Mass.
ph Nelson, Mech	Wickford,	R. I.
thony Enoch, Sci	Chepachet,	"
Lenora Estelle, Sci	Kenyon,	"
ertha Douglass, Sci	Swansea Centre,	Mass.
Charles Noyes, Sci	Shannock,	R. I.
ames Robert, Mech	Belleville,	"

FRESHMEN.

Carlton Garfield	Potter Hill,	R. I.
ellie Albertine	Shannock,	"
Charles Stuart	Providence,	"
ouis George Karl, Jr	Pawtucket,	"
dna Ethel.	Kenyon,	"
William James	Kenyon,	"
rthur Albertus	Narragansett Pier,	"
Ernest	Wakefield,	"
Robert Elisha	Middletown,	"
Charles Spurgeon	Peace Dale,	"
Henry Oscar	Plainfield,	Conn.
Adolph Earl	Newport,	R. I.
harles Arthur	Bristol,	"

Moffitt, William Smith	Newport.	R. I.
Newton, Dudley, Jr.	Newport.	..
Palmer, Sadie Wilcox	Wakefield.	..
Reuter, Louis John	Westerly.	..
Sherman, Anna Brown	Kingston.	..
Sherman, Arthur Almy	Portsmouth.	..
Sherman, Elizabeth Agnes	West Kingston,	..
Sherman, Walter Nathaniel	Allenton.	..
Smith, Howard Dexter	North Scituate,	..
Soule, George Canning, Jr.	Wickford.	..
Stillman, Fannie Esther	Kenyon.	..

SPECIALS.

Arnold, William Ballou	Woonsocket,	R. I.
Bacheller, William Stanhope	Newport,	“
Baldwin, Margaret	Aspen Wall,	Va.
Bates, Edward Ayer	Pawtucket,	R. I.
Briggs, Glenn Ira	Woonsocket,	“
Campbell, Duncan	Phenix,	“
Case, Harold Warren	Pawtucket,	“
Clarke, Latham	West Kingston,	..
Clarke, William Lamont Wheeler	Jamestown,	“
Conant, Walter Aiken	Wellesley Hills,	Mass.
Crandall, Linton B.	Ashaway,	R. I.
Cullen, Edmund Daniel	East Greenwich,	“
Dimock, Mary Winifred	Merrow,	Conn.
Doughty, Robert Stanley	Providence,	R. I.
Emmet, James R.	Peace Dale,	“
Flagg, Clarence LeVoy	Arnold Mills,	“
George, Lillian Mabelle	Amesbury,	Mass.
Goddard, Edith	Brockton,	“
Greene, Prescott Morrill	Peace Dale,	R. I.
Harrison, Edmund	Ashbury Park,	N. J.
Hopkins, Fannie Lewis	Plainfield,	Conn.

ence Dudley	Somerville,	Mass.
arabed	Harpoot,	Turkey.
lisha Frederic	Peace Dale,	R. I.
fford Brewster	Pawtucket,	“
ce Earl	Watch Hill,	“
y Francis	Providence,	“
lizabeth May	Wickford,	“
rbert James	Middletown,	“
R.	Kingston,	“
car Dean	Wickford,	“
bert Joseph	Usquepaug,	“
en Lawton	South Portsmouth,	“
n Sumner	South Portsmouth,	“
Bertine	Wickford,	“
a Hoxsie	Wood River Junc.,	“
ore Arnold	Wakefield,	“
tie James	Usquepaug,	“
Potter	Kingston,	“
rt Comstock	Kingston,	“
ester Wilson	Arctic,	“
evi Eugene	South Scituate,	“
	Kingston,	“
les William	Kingston,	“
Wilber	Wakefield,	“

SPECIALS IN WOOD-CARVING.

Auel	Shannock,	R. I.
Armstrong	Wakefield,	“
osworth	Kingston,	“
. Brown	Kingston,	“
Carmichael	Shannock,	“
Carr	Kingston,	“
Clark	Shannock,	“
larke	Shannock,	“

Mrs. A. A. Greenman	Kingston,	R. I.
Miss May J. Lanphear	Peace Dale,	"
Mrs. W. J. Nichols	Shannock,	"
Miss Mary E. Wright	Shannock,	"

SPECIALS IN POULTRY SCHOOL.

Dallas, Roderick W	Bayonne,	N. J.
Hill, Paul	Lowell,	Mass.
Lewis, Aubrey C	West Kingston,	R. I.
Marion, F. L	Woburn,	Mass.
Riley, Anna L	New York,	N. Y.
Ternberg, E. S	East Greenwich,	R. I.
Valentine, Mrs. F. H	Cranford,	N. J.
Wildman, J. W	Newton Upper Falls,	Mass.

Post Graduates	7
Graduates of 1897	11
Seniors	12
Juniors	20
Sophomores	21
Freshmen	24
Specials	47
Specials in Wood-carving	12
Specials in Poultry School	8
Total, counting none twice	162
Students in College Extension courses	32

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TREASURER'S REPORT.

ELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

1897.	Dr.	
n. 1.	To cash balance on hand	$129 20
	Interest from 1862 fund	2,941 60
	J. H. Washburn, President, for students' board, etc	8,450 00
	Incidentals, credits, cash	4,072 40
	Cash received from interest	18 48
		$15,611 68

1897.	Cr.	
	By salaries	$1,182 19
	Postage, stationery and printing	168 50
	Freight and expressage	809 73
	Traveling	109 32
	Labor	4,402 02
	Store	1,199 14
	Incidentals	3,706 63
	Construction and repairs	797 02
	Provisions	2,531 97
	Boarding expense	574 75
	Cash on hand Jan. 1, 1898	130 41
		$15,611 68

THIS IS TO CERTIFY that the undersigned, auditing committee of the Boar of Managers of the Rhode Island College of Agriculture and Mechanic Arts have examined the accounts of Melville Bull, treasurer, as above, and find th same to be correct, leaving a balance in said treasurer's hands of one hundre and thirty dollars and forty-one cents ($130.41).

GARDINER C. SIMS,
J. V. B. WATSON.
Auditing Committee.

THE RHODE ISLAND AGRICULTURAL EXPERIMENT STATION *in account with th* UNITED STATES' APPROPRIATION.

1897.	DR.		
	To receipts from the treasurer of the United States as per appropriation for the year ending June 30, 1897, under act of Congress approved March 2, 1887........		$15,000 0
1897.	CR.		
	By salaries..................................	$9,098 89	
	Labor..................................	2,076 86	
	Publications..................................	1,143 60	
	Postage and stationery	122 84	
	Freight and expressage..................	222 11	
	Heat, light and water......	136 50	
	Chemical supplies.....	39 67	
	Seeds, plants, and sundry supplies........	729 44	
	Fertilizers..........	350 78	
	Feeding stuffs..........	29 00	
	Library..............	16 40	
	Tools, implements, and machinery.	170 42	
	Furniture and fixtures......	47 39	
	Scientific apparatus......................	45 81	
	Live stock..............................	75 25	
	Traveling expenses.............	150 43	
	Contingent expenses..........	16 75	
	Building and repairs.................. ..	527 86	
			$15,000 0

We, the undersigned, duly appointed auditors of the corporation, do hereby certify that we have examined the books and accounts of the Rhode Island Experiment Station for the fiscal year ending June 30, 1897; that we have found the same well kept, and classified as above, and that the receipts for the year from the treasurer of the United States are shown to have been fifteen thousand dollars, and the corresponding disbursements fifteen thousand dollars; for all of which proper vouchers are on file, and have been by us examined and found correct.

And we further certify that the expenditures have been solely for the purpose set forth in the act of Congress approved March 2, 1887.

Signed,

GARDINER C. SIMS,
J. V. B. WATSON,
Auditors.

NEWPORT, R. I., August 28, 1897.

I hereby certify that the above is a true copy from the books of account of the institution named.

MELVILLE BULL,
Treasurer.

I hereby certify that the above signature is that of the treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

1897.	DR.	
June 30.	To balance from last year	$1,154 20
	Station receipts	2,429 73
	Station receipts, fertilizer inspection	2,856 54
	Interest	59 87
		$6,500 34

1897.	**Cr.**	
	By Labor	$63 10
	Postage and stationery	23 60
	Heat, light and water	4 14
	Seeds, plants and sundry supplies	15 34
	Fertilizer control	2,863 40
	Feeding stuffs	176 83
	Library	657 75
	Tools, implements and machinery	34 57
	Furniture and fixtures	510 04
	Scientific apparatus	8 28
	Live stock	11 37
	Traveling expenses	18 88
	Building and repairs	962 32
	Balance on hand	1,150 72
		$6,500 34

This certifies that the undersigned, auditing committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, treasurer of the Agricultural Experiment Station, and the vouchers corresponding therewith, for the year ending June 30, 1897, and find the same correct.

Total receipts are $6,500.34, and the total expenditures are $5,349.62, leaving a balance of $1,150.72 to new account.

GARDINER C. SIMS,
J. V. B. WATSON,
Auditing Committee.

MELVILLE BULL, *Treasurer, in account with* UNITED STATES' SPECIAL APPROPRIATION.

1896.	**Dr.**	
June 30.	To balance on hand	$1,093 [illegible]
	Interest	46 [illegible]
		$1,139 38
	Cr.	
	By Library	$719 84
	Furniture and fixtures	419 54
		$1,139 38

We, the undersigned, duly appointed auditing committee, hereby certify that this account has been compared with the regular Station account and found correct, with no balance.

GARDINER C. SIMS,
J. V. B. WATSON,
Auditing Committee.

Synopsis of the Report of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts to the Secretary of Agriculture and the Secretary of the Interior, of amount received under Act of Congress, of August 30, 1890, in aid of Colleges of Agriculture and the Mechanic Arts, and of the disbursements thereof, to and including June 30, 1897.

Balance on hand July 1, 1896	$32,227 29
Installment for 1896–'97, received July 23, 1896	22,000 00
Total available for year ending June 30, 1897	$54,227 29

DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE 30, 1897.

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction	$6,631 46
SCHEDULE B.—Disbursements for Instruction in Mechanic Arts and for facilities for such instruction	6,721 54
SCHEDULE C.—Disbursements for Instruction in English Language and for facilities for such instruction	3,169 22
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction	1,275 07
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction	13,068 01

SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction	24 80	
Total expended during the year		$30,890 10
Balance remaining unexpended June 30, 1897		23,337 19
		$54,227 29

I HEREBY CERTIFY that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named; and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction.

MELVILLE BULL, *Treasurer.*

INVENTORY OF THE PROPERTY OF THE RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Property of the Department of Agriculture and Horticulture	$11,165 28
Property of the Department of Mechanic Arts	14,962 41
Property of the Department of English and History	5,489 77
Property of the Department of Mathematics	1,679 97
Property of the Departmaut of Natural Sciences	23,606 08
Property of the Department of Political Science	273 08
Property of the Boarding Department	2,405 80
Property of the Women's Dormitory	1,300 00
Guns, cannon, and other military equipment	4,641 00
Furniture in offices and schoolrooms	1,816 00
Scientific apparatus, tools, and machinery of the Experiment Station.	5,194 11
Books of the Experiment Station	3,405 40
Other property of the Experiment Station	7,071 50
Amount of personal property	$83,010 40

llege of Agriculture
and
Mechanic Arts.

Kingston. R. I.

1899.

lege of Agriculture
and
Mechanic Arts.

Kingston, R. I.

1899.

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Eleventh Annual Report

OF THE

Corporation, Board of Managers,

OF THE

R. I. College of Agriculture

and

Mechanic Arts,

MADE TO THE

General Assembly at its January Session, 1899.

Part 1.

PART 2, EXPERIMENT STATION REPORT, IS PRINTED UNDER SEPARATE COVER.

PROVIDENCE, R. I.
E. L. FREEMAN & SONS, STATE PRINTERS.
1899.

Rhode Island College of Agriculture and Mechanic Art

CORPORATION.

Hon. MELVILLE BULL ....Newport Cou
Hon. C. H. COGGESHALL..................................Bristol Cou
Hon. HENRY L. GREENE.......................................Kent Cou
Hon. GARDINER C. SIMS.............................Providence Cou
Hon. J. V. B. WATSON. ....Washington Cou

OFFICERS OF THE CORPORATION.

Hon. HENRY L. GREENE, President...........P. O., Riverpoint, R.
Hon. C. H. COGGESHALL, Vice-President...........P. O., Bristol, R.
Hon. GARDINER C. SIMS, Clerk................P. O., Providence, R. I
Hon. MELVILLE BULL, Treasurer.................P. O., Newport, R. I

REPORT.

To His Excellency Elisha Dyer, Governor, and the Honorable General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1899:

I have the honor to submit herewith the Eleventh Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

HENRY L. GREENE,

President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

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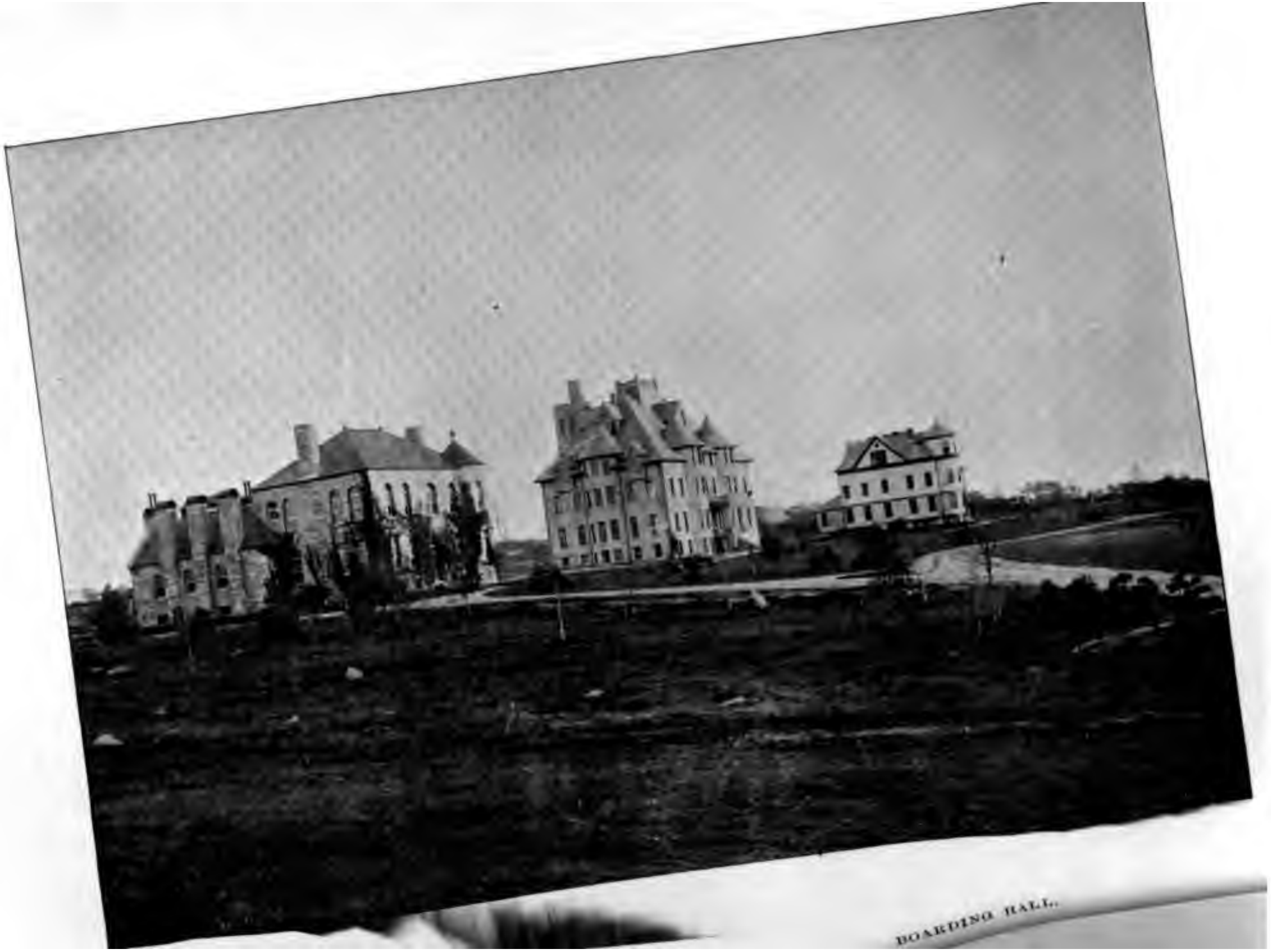
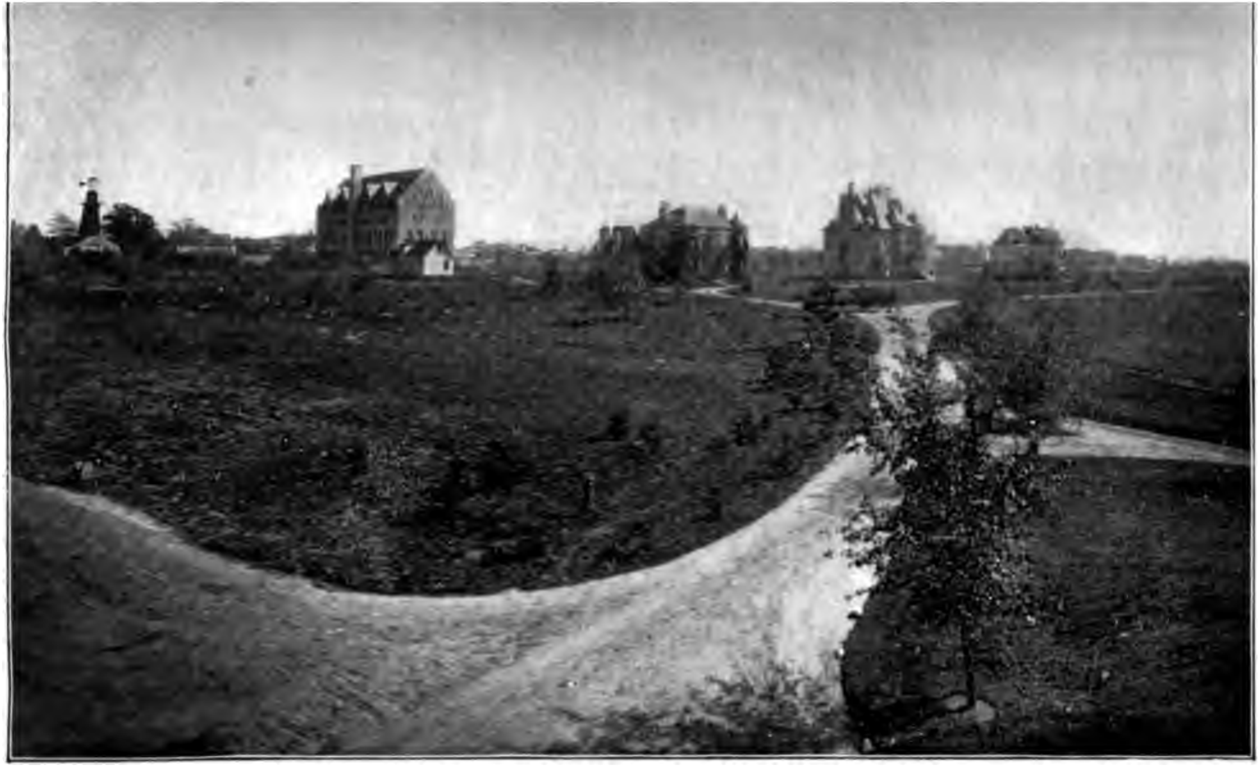


BOARDING HALL.



GENERAL VIEW.

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FACULTY AND ASSISTANTS.

JOHN HOSEA WASHBURN, PH. D.,

PRESIDENT,

Professor of Agricultural Chemistry.

assachusetts Agricultural College, 1878; Graduate student, Brown University, 1880;
student, Massachusetts Agricultural College, 1881-1883: Professor of Chemistry,
gricultural School, 1883-1887; Student in Göttingen University, 1885 and 1887-1889;
öttingen, 1889; Appointed President, 1890.

HOMER JAY WHEELER, PH. D.,

Professor of Geology,

assachusetts Agricultural College, 1883: Assistant Chemist, Massachusetts State
ent Station, 1883-1887; Graduate student, University of Göttingen, 1887-1889; Ph. D.,
n, 1889; Appointed Chemist of Rhode Island Agricultural Experiment Station and
r of Geology, 1890.

*ANNE LUCY BOSWORTH, B. S.,

Professor of Mathematics.

Vellesley College, 1890; First Assistant, Amesbury (Mass.) High School, 1890-1892;
d Professor of Mathematics, April, 1892; Graduate student at the University of
summer of 1894 and 1896.

E. JOSEPHINE WATSON, A. M.,

Professor of Languages,

mith College, 1882; A. M., The Cornell University, 1883; Assistant in English, Smith
1883-1887; Student of North European Languages in Göttingen, 1887-1889; Appointed
r of Languages, September, 1892; Student of French in Tours, summer of 1895.

WILLIAM ELISHA DRAKE, B. S.,

Professor of Mechanical Engineering,

olytechnic Institute, Worcester, 1886; Instructor in Physics and Electricity, Wor-
lytechnic Institute, 1887; Instructor in Woodworking at Pratt Institute, Brooklyn,
; Appointed Professor of Mechanical Engineering, 1893.

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ent in Europe for the year.

*OLIVER CHASE WIGGIN, M. D.,

Professor of Comparative Anatomy and Physiology,

M. D., Harvard University, 1863; Practicing physician in Providence, 1866-1886; Visiting
physician to R. I. Hospital, 1872-1882; Consulting physician to Dexter Asylum, 1875-1885;
President Providence Medical Association, 1880-1882; President Rhode Island Medical Society,
1884-1886; Founder of the Providence Lying-in Hospital, and President 1884-1891; Appointed
Professor of Comparative Anatomy and Physiology, 1893.

WILLIAM WALLACE WOTHERSPOON,

Captain 12th Infantry, U. S. A.,

Professor of Military Science and Tactics,

Appointed 2nd Lieutenant, 12th Infantry, October 1, 1878; Promoted 1st Lieutenant, Mar
20, 1879; Promoted Captain 12th Infantry, April 28, 1893; Appointed Professor of Milita
Science and Tactics, November, 1894.

HARRIET LATHROP MERROW, A. M.,

Professor of Botany,

B. S., Wellesley College, 1886; Teacher of Science, Plymouth (Mass.) High School, 18
Teacher of Science, Harcourt Place, Gambier, O., 1888-1891; Graduate student, Unive
Michigan, 1891-1892; A. M., Wellesley College, 1893; Graduate assistant, Botanical Lab
University of Michigan, 1893-1894; Appointed Professor of Botany, January, 1895.

ARTHUR AMBER BRIGHAM, PH. D.,

Professor of Agriculture,

B. S., Massachusetts Agricultural College, 1878; Engaged in practical farmin
Professor of Agriculture in the Imperial Agricultural College at Sapporo, Jap
Graduate student at Göttingen University, 1893-1896; Ph. D., Göttingen, 189
Professor of Agriculture, 1896.

GEORGE WILTON FIELD, PH. D.,

Professor of Zoology,

A. B., Brown University, 1887, and A. M., 1890; Ph. D., Johns Hopkins
Assistant in Biology, Johns Hopkins University, 1891-1892; Occupant of S
Naples Zoölogical Station, 1892-1893; Student at University of Munich, 1
fessor of Cellular Biology, Brown University, 1893-1896; Appointed Profe

FRED WALLACE CARD, M. S.,

Professor of Horticulture,

n University, 1893;
ssor of

ADELAIDE SMITH, B. S.,

Acting Professor of Mathematics.

B. S., Wellesley College, 1890; First Assistant, Boone (Iowa) High School, 1893-1894; Graduate student at the University of Chicago, summer of 1894; Graduate student at the Columbian University, Washington, D. C., 1894-1895; Appointed Acting Professor of Mathematics, 1898.

*JAMES DE LOSS TOWAR, B. S.,

Assistant Professor of Agriculture and in Charge of Civil Engineering.

B. S., Michigan Agricultural College, 1885; Graduate student at Michigan Agricultural College, 1890-1891; Assistant Agriculturist, R. I. Experiment Station, 1891-1894; Appointed Assistant Professor of Agriculture, R. I. College of Agriculture and Mechanic Arts, 1893; Appointed in Charge of Civil Engineering, 1895.

JOHN EMERY BUCHER, A. C., PH. D.,

Associate Professor of Chemistry.

State Normal School, Millersville, Pa., 1887-1888; A. C., Lehigh University, 1891; Ph. D., Johns Hopkins University, 1894; Instructor in Organic Chemistry, Tufts College, 1894-1897; Appointed Associate Professor of Chemistry, 1897.

ARTHUR CURTIS SCOTT, B. S.,

Assistant Professor of Physics.

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Harvard University, summer course in Physics, 1895; Appointed Instructor in Physics, 1895; Student at The Cornell University, summer course in Physics, 1896; Student at Massachusetts Institute of Technology, summer course in Physics, 1897; Student at Harvard University, summer course in Geology, 1897; Appointed Assistant Professor of Physics, 1897.

MABEL DEWITT ELDRED, B. S.,

Instructor in Drawing.

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Chase Art School, winter of 1897-1898; Appointed Instructor in Drawing, 1897.

MARY WATKINSON ROCKWELL, B. L.,

Instructor in Languages.

Student at Göttingen, 1887-1889; Graduate, Norwich Free Academy, 1892; Student in France, 1892-1893; B. L., Smith College, 1897; Appointed Instructor in Languages, 1897.

LUCY HARRIET PUTNAM,

Instructor in Expression.

Graduate of School of Expression, Boston, Mass., 1896; Instructor at summer session of School of Expression, Plymouth, Mass., 1896; Appointed Instructor in Expression, 1896.

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* Resigned May 1, 1898.

THOMAS CARROLL RODMAN,

Instructor in Woodwork.

Appointed, 1890.

HOWLAND BURDICK, B. S.,

Assistant in Agriculture and Farm Superintendent.

HELEN ELIZABETH BROOKS,

Instructor in Stenography and Typewriting.

Student in Chandler's Normal Shorthand School, 1894; Graduate of Boston Normal Schoo of Gymnastics, 1897; Appointed Instructor in Stenography and Typewriting, 1898.

MARSHALL HENRY TYLER, B. S.,

Master of the Preparatory Department.

B. S., Amherst College, 1897; Instructor at St. Mark's, 1897-1898; Appointed Master of th Preparatory Department, 1898.

JAMES SIDNEY ALLEN, Jr., A. B.,

Instructor in History and Political Science.

A. B., Brown University, 1898; Appointed Instructor in History and Political Science, 1898.

FRANK EDWIN CRAIG, B. S.,

Instructor in Mechanical Drawing.

B. S., Mechanical Engineering, Worcester Polytechnic Institute, 1898; Appointed Instru in Mechanical Drawing, 1898.

GEORGE BURLEIGH KNIGHT,

Assistant in Ironwork.

NATHANIEL HELME,

Meteorologist.

GRADUATE ASSISTANTS.

*CHARLES SHERMAN CLARKE, B. S.,

Assistant in Mechanics.

JOHN FRANKLIN KNOWLES, B. S.,

Assistant in Woodwork.

*LOUIS HERBERT MARSLAND, B. S.,

Assistant in Mathematics.

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* Resigned July 1, 1898.

COLLEGE CALENDAR.

1899.

WINTER TERM.

ary 2	Examination of Conditioned Students.
uary 3, 1 P. M	Term begins.
uary 26	Day of Prayer for Colleges.
ruary 22	Washington's Birthday.
ch 24	Term ends.

SPRING TERM.

ril 3, 10 A. M.	Examination of Conditioned Students.
ril 4, 1 P. M.	Term begins.
il 14	Morrill Day.
e 11.	Baccalaureate Sunday.
e 12	Reading of Cincinnati Orations for Lippitt Prize.
e 13	Commencement.
e 16, 17, 10 A. M.,	Entrance Examinations for College and Preparatory Department.

FALL TERM.

gust 31 and September 1, 10 A. M	Entrance Examinations.
tember 19, 10 A. M	Examination of Conditioned Students.
tember 18, 19, 10 A. M	Entrance Examinations.
tember 20, 1 P. M.	Term begins.
———	Thanksgiving Day.
cember 22	Term ends.

1900.

WINTER TERM.

January 2, 10 A. M.	Examination of Conditioned Stude
January 2, 1 P. M	Term beg
January 25	Day of Prayer for Colle
February 22	Washington's birth
March 30	Term e

SPRING TERM.

April 9, 10 A. M.	Examination of Conditioned Stude
April 10, 1 P. M	Term beg
——— —	Arbor D
May 30	Memorial D
June 17	Baccalaureate Sund
June 19	Commenceme
June 20, 21, 10 A. M.	Entrance Examinati

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EXPERIMENT STATION STAFF.

JOHN H. WASHBURN, Ph. D.	President of the College.
A. A. BRIGHAM, Ph. D.	Director and Agriculturist.
H. J. WHEELER, Ph. D.	Chemist.
FRED W. CARD, M. S.	Horticulturist.
GEORGE W. FIELD, Ph. D.	Biologist.
***J. D. TOWAR**, B. S.	Assistant Agriculturist.
JOSEPH A. TILLINGHAST	Director of Field Experiments.
B. L. HARTWELL, B. S.	Assistant Chemist.
GEORGE E. ADAMS, B. S.	Assistant Horticulturist.
NATHANIEL HELME	Meteorologist.

The Experiment Station Council consists of the President of the College, **the Director of the Station**, the heads of departments; and their first assistants.

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*Resigned May 1, 1898.

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THE COLLEGE.

HISTORY.

IN 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for Senator and Representative in Congress. The land was to old by the States, or their agents, the proceeds arising from sale invested, and the annual income derived therefrom was to “inviolably appropriated by each State which may take and m the benefit of this act, to the endowment, support and main- ance of at least one college where the leading object shall be, hout excluding other scientific and classical studies, and in- ding military tactics, to teach such branches of learning as are ated to Agriculture and Mechanic Arts, in such manner as the gislatures of the States may respectively prescribe, in order to mote the liberal and practical education of the industrial sses in the several pursuits and professions in life.”

On March 2, 1887, the act known as the Hatch Act was passed, propriating $15,000 annually to each State, for the purpose of ablishing an Agricultural Experiment Station in connection th an Agricultural College or School.

From the time of the acceptance by the State of Rhode Island the land scrip in 1863, there were many people who felt that is State did not offer to young men such advantages for instruc- n in agriculture and mechanic arts as others afforded that had nuine agricultural and mechanical colleges. So great was the ssatisfaction among the citizens of Rhode Island at the absence

e educational advantages, that they were determined to
he Hatch Agricultural Experiment Station located at
de agricultural educational institution.
e Rhode Island State Agricultural School was established
rding to Chapter 706 of the Public Laws, passed May 23, 1888.
he United States Congress, on August 30, 1890, passed an act
own as the new Morrill Bill. This appropriated for the further
pport of the agricultural and mechanical colleges a sum be-
inning with $15,000, and continuing, with a yearly increase of
$1,000, until the annual appropriation should reach $25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Laws, incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis, with an entirely new course of study.

On April 19, 1894, the Legislature passed an act authorizing the State treasurer to pay Brown University the sum of $40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

On January 27, 1895, the college dormitory was destroyed by fire; but it was replaced by a new granite building, which w ready for use the first of October of the same year, and which now designated as Davis Hall.

At the January session of the Legislature, 1897, the instituti was given an appropriation for a stone building, one hundred a thirty feet by forty feet, practically three stories high. The basement has three rooms used for instruction in photography a physics, and a large room devoted to electrical engineering. the second floor are recitation rooms, chapel, library and readi and young women's study-room. The third floor cont drill and gymnasium purposes, above whic The hall is also used for assem whenever larger audiences are expected than the chapel can accommodate. This building, now named Lippitt Hall, is well equipped with apparatus which the college has owned for some time, and has been waiting to place where the most benefit might be derived from it.

GROWTH DURING 1898.

During the past year, Mr. Marshall H. Tyler has been appointed instructor in civil engineering and master of the preparatory department. Mr. James S. Allen, Jr., has been appointed instructor in political science and history.

The health of the students has been unusually good. This improvement is largely due to the use of a gymnasium, which is ample for exercise when the weather and the condition of the grounds are such that it would be impossible to exercise in the open.

The special poultry course has become so popular that more persons have applied than it has been possible to admit, as the number is limited to twenty-five. The two years' preparatory department has already proved its usefulness, by linking the college course to that of the better country schools. For lack of room, it was necessary to limit the number of students.

OBJECT OF THE INSTITUTION.

The college stands for the idea that technical work, properly taught, possesses educative value equal at least to that furnished by the classics, but that premature specialization is to be avoided if the best results are to be attained; that technical education, to meet the requirements, must be based upon a sound knowledge of mathematics, the natural sciences, and the English language. The method employed is technical instruction in agriculture, in the mechanic arts, and in the sciences. The student who enters for a full course selects one of five courses, or groups. Each of these offers special facilities in the branches peculiar to it; and in addition, extended studies in language and literature find a place in each course, as the student is impressed with the fact that the purpose of education is two-fold—to confer the utmost benefit upon the community through the individual, and, further, to give to the individual the utmost pleasure and satisfaction for himself.

By means of the preparatory department, opportunities are open to those whose previous preparation has not been so fortunate, and it is hoped that no one will be deterred from making use of them either from a lack of earlier advantages or of money. Thus far no worthy student has been compelled to leave the institution for lack of means. The instruction is free to any inhabitant of Rhode Island who is of good character and has the ability to take advantage of the opportunities here offered.

Short courses in agriculture and certain lines of mechanics, and special work in science, are open to those unable to take the regular college work. For these courses no examination is required, except such as will satisfy the professor in charge of any branch chosen that the applicant is prepared to derive benefit from the work he wishes to elect. Whenever possible, however, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is believed that no such thorough preparation can be obtained from special courses selected by the student.

REQUIREMENTS FOR ADMISSION TO PREPARATORY DEPARTMENT, 1899.

Candidates for admission must bring testimonials of good character and must be not less than fifteen years of age. Oral and written examinations will be given in advanced arithmetic, geography, English grammar, and United States history. Each candidate will be required to write a short composition upon a subject announced at the time of the examination. The composition will be expected to show familiarity with the works mentioned below: Hawthorne's Wonder Book, Dickens's Christmas Carol, Irving's Sketch Book, Scott's Lady of the Lake, Longfellow's Evangeline. Applicants for the regular course will find some knowledge of algebra of great assistance.

Students entering the preparatory department may take, together with the regular studies of this course, any other work from the college courses for which they are prepared.

REQUIREMENTS FOR ADMISSION TO THE COLLEGE, 1899.

Graduates from high schools, and other schools of similar grade, are admitted without examination, on certificates which are filled out by their principals. The candidate must apply to the college for the certificate, giving the address of his principal who is to certify him. The college will correspond with the principal, furnishing blanks for him to fill. Graduates from high schools are not admitted on diploma.

Candidates not entering the Freshman class on certificate will be examined in arithmetic; algebra; plane geometry; English grammar; advanced English; United States history; geography, physical and political; one year of German, French, or Latin.

In the arithmetic examination especial attention will be paid to fractions, the metric system, simple and compound proportion, and square and cube root; thorough drill in mental arithmetic will be necessary. The applicant should have mastered all of Wells's Academic or Wentworth's School Algebra, and Wells's Plane Geometry, or their equivalents. In geography, familiarity with some common-school text-book will be expected. Frye's geography is recommended. The history requirements will be met by familiarity with Fiske's or some similar United States history. The examination in English grammar will include definitions, formation of plurals, inflexion of nouns, pronouns and verbs, comparison of adjectives and adverbs, analysis and parsing, with especial attention to punctuation and the use of capitals. The advanced English requirements are those prescribed for entrance to the New England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. The books prescribed for 1899 are the following: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, books I, VI, XXII, XXIV; The Sir Roger de Coverley Papers, in The Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. (*b*) Shakespeare's Macbeth; Milton's Paradise Lost, books I and II; Burke's Conciliation with America; Carlyle's Essay on Burns. For 1900: (*a*) Dryden's Palamon and Arcite; Pope's Iliad, books I, VI, XXII, XXIV; The Sir Roger de Coverley Papers, in The Spectator; Goldsmith's The Vicar of Wakefield; Scott's Ivanhoe; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Tennyson's The Princess; Lowell's The Vision of Sir Launfal. (*b*) Shakespeare's Macbeth; Milton's Paradise Lost, books I and II; Burke's Conciliation with America; Macaulay's Essays on Milton and on Addison. For 1901: (*a*) George Eliot's Silas Marner; Pope's Translation of the Iliad, books I, VI, XXII and XXIV; The Sir Roger de Coverley Papers, in The Spectator; Goldsmith's Vicar of Wakefield; Scott's Ivanhoe; Shakespeare's Merchant of Venice; Cooper's Last of the Mohicans; Tennyson's Princess; Coleridge's Rime of the Ancient Mariner. (*b*) Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, Comus and Lycidas; Burke's Speech on Conciliation with America; Macaulay's Essays on Addison and Milton. For 1902: (*a*) George Eliot's Silas Marner; Pope's Translation of the Iliad, books I, VI, XXII and XXIV; The Sir Roger de Coverley Papers in The Spectator; Goldsmith's Vicar of Wakeeld; Scott's Ivanhoe; Shakespeare's Merchant of Venice; Cooper's Last of the Mohicans; Tennyson's Princess; Coleridge's Rime of the Ancient Mariner. (*b*) Same as 1901. The language equirements will cover one year's work in either French, German or Latin; and Latin is recommended. In French and German, his requirement comprises the essentials of grammar, easy reading, and elementary composition. In Latin, the candidate must be prepared to study Cæsar. The following text-books are recommended: Chardenal's Complete French Course, Lyon and De Larpent's Primary French Translation Book; the Joynes-Meissner German Grammar, Part I; Guerber's Märchen und Erzählungen, Part I, or Collar's Shorter Eysenbach; Collar and Daniel's Beginner's Latin Book.

ADMISSION TO ADVANCED STANDING.

Candidates may enter any of the higher classes for whose work they are prepared.

OPPORTUNITIES OFFERED TO WOMEN.

The courses offered to men are open to women, together with special courses. The women's dormitory will accommodate a limited number of students, and the college will on application find boarding-places for others in private families in town. Special waiting and study rooms are provided for the women who are day students.

DOMESTIC SCIENCE.

The college offers no separate course by the title of domestic science, but all young women candidates for a degree may receive instruction in domestic science as follows. In the fall term of the Sophomore year, there is offered a three-hour elective in the construction, ventilation, plumbing and heating of homes and school buildings. In chemistry, the adulteration of foods is studied, and analyses of milk, water, dairy products, and fru[illegible] are made. Electives are offered in physiological chemistry, sanitary chemistry, and the chemistry of cooking. Hygiene and the physiology of digestion are treated in the courses in zoölogy.

EXPENSES FOR WOMEN.

Board, including room rent, is three dollars per week. Fuel and lights are supplied at cost. Rooms are provided with necessary furniture, including mattresses, but no other bedding material. Other expenses are as given below. The women have an opportunity to do their own washing and ironing. A Singer and a Household sewing-machine are at the disposal of all those living at the dormitory.

*EXPENSES.**

Tuition is free to all Rhode Island students. The regular expenses are tabulated below:

	Per Year.	
	Minimum.	Maximum.
Room rent, $3 per term	$9 00	$9 00
Board, $3 per week, for 36 weeks	108 00	108 00
Fuel, spring and fall terms, each $3; winter term, $6	12 00	12 00
Light, $1 to $3 per term	3 00	9 00
Books	15 00	30 00
Washing, 30c. to 60c. per week	10 80	21 60
Uniform for military drill, $15	7 50	30 00
Reading-room tax, 25c. per term	75	75
General expense, for damage in building, etc., 50c. per term.	1 50	1 50
Laboratory fees, $2 to $10 per term	6 00	30 00
	$173 55	$251 85

The amount of laboratory fees depends upon the laboratory work taken each term. One dollar per term is charged for each of the following: botanical, zoölogical and physical laboratories; carpenter shop; wood-turning; forge shop; machine shop and wood-carving. This pays for the material ordinarily used in class work and for the wear and care of tools and apparatus. Any person who breaks apparatus or tools, through carelessness or neglect of instructions, will be charged the cost of the same. The chemical laboratory fee is three dollars per term for qualitative, quantitative and organic laboratory work. This covers general chemicals and use of apparatus. Students are required to pay for breakage and for any chemicals they may use in making special preparations for themselves. Graduates pay the cost of diplomas, five dollars. *No diploma will be issued until the candidate has paid all term bills.* Every able-bodied male student is required to drill and to wear a uniform. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time. Day students are required to deposit five dollars per term in advance. The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term, a team conveys trunks to and from the station. Boarding students shall pay term bills in advance, deposit fifty dollars each term, or give bond for two hundred dollars for the payment of all bills. No bond will be accepted from any member of the faculty. A reduction of fifty cents per week on board is allowed students going home Friday afternoon and returning Monday forenoon, provided that notice of the intended absence is given in advance. Those failing to give such notice will be charged full price for board. No other reduction is made for less than three whole days' absence at one time, and this only when notice is given as above. Fifteen cents extra is charged for each meal sent to a student's room, from sickness or any other cause. *All students in the men's dormitory are required to supply their own furniture and bedding.* The necessary furniture may be obtained at the college when desired. A room may be furnished for from eight to ten dollars. Iron bedsteads three feet wide are included under room-rent. The furniture, if properly kept, may be sold, when the student leaves, for one-half to three-fourths the original price. All clothing should be distinctly marked.

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* For exceptions in the expenses for women, see above.

SELF-HELP.

A limited amount of work about the buildings, on the farm, at the experiment station, and in the laboratories, will be furnished to students who desire it, and who prove industrious and trustworthy. Good students, who desire to help in paying their expenses, should be able to earn from twenty-five to one hundred dollars per year, depending upon the amount of time they can spare from their studies. *No work is given to students who have not a fair standing in their classes.* The larger sums can be earned only by students who spend their vacations here at work. These opportunities are offered only to students who show a sense of responsibility in the performance of the duties assigned to them, and a disposition to render a fair equivalent of work for the compensation they receive.

THE LIPPITT PRIZE.

The Lippitt prize consists of a purse of one hundred dollars, offered through the generosity of ex-Governor Charles Warren Lippitt. This sum is divided into two prizes, the first of sixty, and the second of forty dollars, which are awarded to the best written and delivered essays on the history of Rhode Island in the Revolution. These essays are, of the nature of Cincinnati orations, and are read on the Monday preceding commencement. In 1898 the successful competitors were Mary Winifred Dimock, Merrow, Conn., first prize; Ebenezer Payne, Lyons Farms, N. J., second prize.

REGULATIONS OF THE COLLEGE.

Students who do not understand the elements of gentlemanly conduct will not continue to be members of the institution.

Students rooming in the dormitory are expected to conduct themselves with the same decorum as in a private house. Any undue noise or actions liable to disturb the other occupants of the building will cause the offender to be publicly warned; and on a repetition of the offence, he will be dismissed from the dormitory, for a stated time or permanently, according to the nature of the offence. Money paid for dormitory expenses will not be returned to any student thus dismissed.

Negligence or absence from class duties of any kind will be vigorously opposed. Students are expected to attend all recitations. Any student absenting himself from more than ten per cent. of the total number of recitations in any subject shall not be allowed to take his examination in that subject, except by special vote of the faculty, but shall be conditioned.

Examinations of conditioned students shall be held only on the days assigned in the college calendar. Any student, who, after such examination, shall still have three or more conditions, shall be obliged to withdraw from the college. Students still having not more than two conditions may take second examinations at the next regular time, and failing to pass, shall have no further opportunity to remove such conditions except by special vote of the faculty.

A student wishing to take an examination to remove a condition must make application for the same to the professor in whose department the condition was received, at least seven days before the date of examination.

Students shall be exempt from examination at the end of the term in studies in which their term averages are above eighty per cent.

Every student who is a candidate for a degree shall prepare a thesis, and shall submit it to the president of the college at least one month before the time for granting the degree.

No student shall publish any article in any college, class or society publication designed for public circulation, or deliver any address at any meeting on the college campus attended by persons other than students, without the consent of the president or some person appointed by him for granting such permissions.

No student shall represent the college on the athletic field, or any other organization before the public, who is not regularly registered and in good standing; by good standing is meant conformity to all the rules of the college.

PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day. Absence from chapel must be reported at the president's office for excuse on Tuesday morning of each week. A branch of the Intercollegiate Young Men's Christian Association is doing good work among the students, as is also the Young Women's Christian Union. Eminent preachers are from time to time invited to address the students.

LOCATION.

The college is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles from the railroad station. A macadamized road leads from the grounds to the station, insuring at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with twenty-one trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.

DEPARTMENTS OF INSTRUCTION.

CHEMISTRY.

Instruction in chemistry begins with the third term of the Sophomore year, and consists of recitations and lectures with laboratory work. Any branch of chemistry may be elected for special work. Since 1897 a chemical course has been offered. General chemistry is taught during the last term of the Sophomore and the first term of the Junior year, in three exercises of recitation and lectures and one exercise of laboratory work each week. Special attention is given to inorganic preparations and problems. Qualitative analysis extends through two terms and is followed by volumetric and quantitative analysis. A course in organic chemistry, in the winter term of the Junior year, treats of the hydrocarbons and their derivatives as far as the benzine series; three exercises per week being devoted to recitations and lectures, and one exercise to laboratory work. The class work is based upon Remsen's Organic Chemistry, and the laboratory practice on Gattermann's Practical Methods of Organic Chemistry. An elective on the benzine series, with two recitations and one exercise of laboratory practice per week, is given in the spring term. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion; analysis of soils, fodders, and fertilizers, milk, butter, and cheese; tests for poisons in the stomachs of different animals; analysis of fruits for sugar, starch, and albuminoids; and the study of chemical changes in soils. Women may substitute for agricultural chemistry an elective in the chemistry of cooking.

A five-hour course in sanitary chemistry or in physiological chemistry may be taken by students who have completed courses I, II, III, and IV. Elective work in the dyeing of wool, cotton, and silk, and of mixtures of the same, is offered to those who have finished the courses in general and organic chemistry and quantitative analysis.

PHYSICS.

Instruction in physics begins with the first term, Freshman year, and consists of lectures and recitations attended by all regular students. The various branches grouped under this head are treated both mathematically and experimentally, particular attention being given to practical application. Heat and sound are studied in the fall term, magnetism and electricity in the winter term, and light and mechanics in the spring term. The winter term is devoted entirely to the study of electricity and magnetism. The advanced study of light embraces an extended discussion of photography, photo-micrography, the use of the microscope and of the projecting lantern. This department is fully equipped to illustrate the use of any form of light employed at the present time in projection work, together with all accessories, including the projection microscope and apparatus for the projection of photographs in original color.

A course in advanced physics is open to all students who have completed course I, or its equivalent. This course includes a deeper and more theoretical study of the subjects of course [illegible], and is treated by lectures and recitations, together with an extended course in laboratory work, designed to make the student more careful and accurate in his work and to encourage original investigation.

A special course in electricity is now open to all students having an elementary knowledge of the subject. As a foundation for subsequent work, instruction is given in the theory of electricity, together with thorough consideration of the various technical applications of electricity, including land and sub-marine telegraphy,

telephone, electric lighting, and the electrical generation and
smission of power. Advanced instruction is given in electrical
surements, including the use of the storage battery (which is
stantly becoming more valuable to electric plants), methods of
trolysis, electro-plating and electro-metallurgy, together with
actical understanding of generators and the testing of tele-
h and telephone lines.

pecial instruction in photography is offered in an elective
rse to students who have an elementary knowledge of physics
chemistry. The course embraces lectures and recitations
n the subject, together with practical methods of photography
he working of negatives, photographs, bromide enlargements,
lantern slides. The college is supplied with the most ap-
red form of apparatus for X-ray photography, and the theory
he work in this line is taught, together with its practical ap-
ations. Special rooms for photographic work are provided,
h will aid greatly to improve the instruction in this branch.

acilities for instruction in physics are now of the best. A
e room in Lippitt Hall is arranged especially for laboratory
k, and the apparatus room adjoining is sufficient to hold the
re-room and experimental apparatus, with which the depart-
t is well equipped.

course in electrical engineering will be open to students as
as the large laboratory provided in the basement of Lippitt
can be properly equipped with machines for experimental
. This laboratory is already provided with two sixty horse-
er boilers, three engines, one of which is a fifty horse-power
ington and Sims, used in connection with an Eddy twenty-
K. W. machine for lighting the college, and one eight K. W.
mo that is used for experimental work. A storage battery of
chloride accumulator cells is also in place for the course.

PHYSIOGRAPHY.

e Freshman class study physiography during the first term,
three exercises per week of recitation and one of laboratory

work, with occasional excursions and field work. A well equipped physiographic laboratory, with globes, models, maps, charts and other illustrative material, together with a special library, is open to the students. Especial attention is given to the scientific phases of the study—to the chemistry and geology of the soils, the influence of air and water on the same; and some reading and time are expended on the flora and fauna of the different countries. Tarr's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. Five hundred lantern slides, illustrating ethnological subjects, are projected and explained before the class. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

AGRICULTURAL GEOLOGY.

The course in agricultural geology embraces structural, dynamical and historical geology, particular attention being paid to the first mentioned subdivision. A careful study is made of those minerals and rocks of importance in the formation of soils, of the agencies by which their decomposition is effected, and of the compounds which result. In this connection the instruction is designed to familiarize the student with the desirable mineral and physical features of soils, with those compounds the presence of which is undesirable or which may give rise to a greater or less degree of soil sterility, and with the means by which such conditions may be avoided or overcome. A proportionate amount of time is devoted to the history of those natural deposits of particular interest to agriculturists; such as nitrate of soda, the German potash salts, and phosphates of various kinds.

BOTANY.

The required work in botany for students in the agricultural, biological, and chemical courses begins in the winter term of the reshman year with a course called the biology of plants, which ntinues three terms. The object of this course is to give the udent a knowledge of plant life, by the study of plants themlves in the laboratory and in the field. Attention is given to presentatives of the vegetable kingdom from the lowest to the ghest. Some time is given to the determination of species, but e chief work of the course is the study of the structure of the ant, its activities, and its relation to its environment. In short, e course is adapted to the needs of the general student who dees a knowledge of the principles of biology as illustrated by r common plants, and also furnishes a good foundation to the dent who is to follow more advanced work in botany, agricule, horticulture, or medicine.

Each student is supplied with a compound microscope, a disting microscope, re-agents and small instruments. The laboray is provided with apparatus for simple physiological experints, a microtome, paraffin bath, charts, thirty Brendel models, iosi and Cavara's Parasitic Fungi of cultivated plants, Ellis's ngi Columbiani, Seymour and Earle's Economic Fungi, and an reasing collection of native plants. A good working library d several American and foreign periodicals are an important rt of the equipment of the laboratory.

It is believed that excellent advantages are offered for those ho wish to elect work in the parasitic fungi of seed-plants. The boratory is provided with a supply of dry and alcoholic material, d collecting fields for fresh material are near at hand.

ZOÖLOGY.

The courses are open to students who have done satisfactory rk in the biology of plants, or an equivalent.

The study of zoölogy is especially valuable for training students *see ;* for strengthening proper individuality of thought and ion ; for cultivating power to feel rightly towards "all things, th great and small ;" for creating an ever-freshening interest in and sympathy towards all conditions of life. The courses offered are designed to meet needs of three sorts:

(A) Of students who will manage farms. To agricultural students are recommended courses I–VI on animal biology; zoölogy of the farm animals; zoölogy of the domestic fowls; the principles and practice of aquiculture; entomology; comparative animal physiology; and the spring fauna of Kingston,—as described under zoölogy in the courses of instruction.

(B) Those who wish to prepare themselves for careers in medicine, veterinary and sanitary science are recommended to take as advanced work, after pursuing the above, phylogeny of animals (general zoölogy), comparative anatomy of the vertebrated animals, comparative normal histology, advanced animal physiology.

(C) Those who wish merely a general knowledge of zoölogical science sufficient to comprehend and to profit by the important current discussions bearing upon man's relations to his environment are recommended to take: Animal biology (satisfactory completion of the course in biology of plants, or the equivalent, is a necessary prerequisite), followed, if desired, by entomology, and the spring fauna of Kingston.

Special attention is called to two features: (1) The strength of the course in zoölogy as applied directly to general agriculture, and as furnishing an adequate basis for understanding our domesticated animals. (2) The course adapted for preliminary training for students who wish to become, after graduation, science teachers in the public schools, or to enter schools of human or veterinary medicine and surgery.

We in this country do not adequately appreciate the importance of the veterinary profession. Veterinary medicine and surgery should cover a wide field. The veterinarian should not only diagnose disease and prescribe medicines, and by skillful surgery allay suffering or save a valuable animal, but he should be an intelligent adviser in the science of breeding. The close relations between diseases of animals and man; e. g. tuberculosis, tetanus (lock-jaw), anthrax (malignant pustule), typhoid fever, etc., call for veterinarians who, by nature and training, are capable of becoming strong members of municipal boards of health, and of combating destructive contagious diseases. They should be experts in sanitary science, in the inspection of meat, milk and foods; they must understand fully the principles and practice of feeding; the physiology of alimentation, gestation and parturition. That the field is important is shown by the figures that the domestic animals of the country are valued at over two billions of dollars; that a single disease, hog-cholera, destroyed thirty-five millions of dollars worth of property last year, and there are other diseases quite as destructive.

The demand for veterinarians and the dignity of the profession increases as it becomes more and more firmly established among the people that both private and public economy, as well as humanity, demands the preservation and improvement of the domestic animals. Many states have passed laws regulating the practice of veterinary medicine and surgery within their borders. A new era is opening which is destined to place veterinary science among the learned professions; for certainly few aims in life can be more commendable than to aid in insuring to man a proper, clean, wholesome food supply.

While the college work thus far deals almost entirely with studies preliminary to the main subject, it is confidently believed that such training as is here afforded will be far superior to that furnished by a prolonged course of lectures in the pure practice, or even by actual clinical work before poorly grounded students. It is expected that this course will deal sufficiently with theory and practice to enable one to treat intelligently all practical cases on the farm. There is no doubt whatever that a student who has satisfactorily completed such a preliminary course will be remarkably well fitted to take high rank in any of the great medi-

of the habits and development of many marine animals.
experiment station's marine laboratory, under the direction
the professor of zoölogy, is open to students who show capac
for effective work. It is located on the shores of the town, ne
Point Judith, and offers excellent opportunities for original i
vestigation and experimentation upon problems of marine biolog

Further opportunities for study are furnished by spring
streams, ponds (natural and artificial), and lakes, upon or imm
diately adjacent to the college grounds. These added to the loc
tion of the college township—in the southeast corner of Rho
Island, its shores bounded by Narragansett bay, and by the A
lantic—render the institution an ideal locality for biologic
study.

The department is provided with Leuckart's charts; Zeigle
and other models, manikins elucidating the anatomy of man, hor
and fowl; preparations of skins and skeletons of typical ver
brated animals; including not only the domesticated animals b
also such rare forms as the gorilla, chimpanzee, lemurs, phalange
manatee, and sloth; birds and mammals peculiar to the Austral
region; the lung-fishes (Dipnoi); the Surinam toad; the gi
salamander (C. japonicus); preserved specimens and preparati
of the most important invertebrated forms; including Nautilu
the shell, Argonauta; apparatus for class demonstration of ma
scopic and microscopic preparations. The department librar
cludes the best literature on the subject; all of the current zoö
cal journals are available, either at the experiment station lib
or by special arrangements. Particular attention is given t
collection illustrating the zoölogy of Rhode Island.

Advanced courses are open to students who have had the
site training. Comparative normal histology, dealing wi
microscopical structure of cells and tissues of the organs
lower and higher animals, including modern methods of
chemical technique and histological investigation, is a cou
ticularly adapted for students who intend to fit themselve
medical and veterinary professions. Courses in con

anatomy of the vertebrated animals, and in comparative embryology are offered to students who are sufficiently advanced.

General comparative embryology is covered in the courses in plant and animal biology.

Students who wish to make a specialty of biological science, for the purpose of becoming science teachers or of pursuing a medical and surgical course, are advised to give the utmost possible attention to physiography; chemistry; physics; English; German; French; Latin; free-hand drawing, including water colors; and psychology, in addition to the purely biological sciences.

Students are urged to consult freely with their instructors in regard to selection of courses.

PSYCHOLOGY.

An elective course in psychology is offered during the winter and spring terms, to Juniors and Seniors. James's Briefer Course is used. Lectures and recitations are supplemented by reading and simple experiments.

AGRICULTURE.

In connection with the new course in agriculture, it may be said that the foundation instruction is largely given in the study of chemistry, botany, physics, geology, anatomy, physiology, zoölogy, and economics.

Following upon this fundamental knowledge, it is the aim in the agricultural course to teach the student the practical application of the scientific principles underlying technical agriculture. This is sought to be accomplished by means of lectures and recitations and by the use of text-books and reference books so far as available. The chief desire is to supplement, enforce and fix this instruction by what may be termed laboratory work in agriculture; that is, by actual educational practice in the different branches of farming.

Commencing in the spring term of the Freshman year, an introduction is given in the form of lectures dealing with the origin and necessity of agriculture, its relation to other occupations, the preparation for farming, the relations of air, water and sunshine and of plant and animal life to agriculture. In the Sophomore year a study is made of farm soils—their characteristics, classification and adaptions, their faults and means of improvement, clearing land and preparing for crops, irrigation and land drainage, with practice in planning and constructing systems of underdraining on the college farm. In the winter term instruction is supplied in the construction, use and care of farm implements, machines and vehicles; and in the arrangement, construction, and maintenance of farm buildings, fences, roads, and bridges. In the spring term fertilization is dealt with, and the instruction is re-inforced by object lessons offered by the fertilization experiments of the experiment station department and by the manuring for the farm crops.

In the first term of the Junior year field crops are considered. During this year horticulture is chiefly taught. (See horticulture.)

In the Senior year opportunity is provided to study live stock husbandry, including the breeds, breeding, care and management of farm animals; rational feeding of live stock; dairy husbandry; poultry culture; farm management and accounts.

Further elective subjects are available to advanced students by special arrangement, including the history and economics of agriculture, agricultural and horticultural literature, farm law, apiculture, agricultural debate, and agricultural experimentation.

During the course in agriculture occasional inspection excursions will be made by the classes to learn what practical, successful specialists in the various branches of modern farming are doing.

Plans for short courses in agriculture have been made. These courses will instruct special students in the principles and details of the best modern practical poultry raising and dairy farming. For placing these special courses in full operation the college awaits the providing by the State of additional suitable buildings and equipment, which will also greatly reinforce the means of instruction in the regular agricultural course.

HORTICULTURE.

Work in horticulture is designed for students from all groups. It is felt that some knowledge of the subject may very properly form a part of every well rounded education.

In the introductory course the aim will be to discuss principles of general importance to all who have to deal with orchard or garden crops. The courses in pomology and vegetable gardening are designed to give practical instruction in the growing of fruits and vegetables.

Landscape gardening is especially recommended to those who seek to appreciate the beautiful in nature or in art. Its aim is the search for beauty as evinced in the work of nature, softened by the touch of art.

Forestry touches problems of import to every citizen interested in the public welfare. Owing to the intimate relation between forests and waterflow, the subject is often of more vital importance to the manufacturer than to the farmer.

The subject of plant-breeding will appeal chiefly to those interested in the broader problems of biological development and relationship. A careful study of the amelioration and development of plants under culture throws light upon many of the general problems of evolution which are of interest to all thinking students.

The courses in reading and original investigation are designed chiefly for students who wish to make a specialty of horticulture.

LANGUAGES.

The subjects grouped under this head are English, German, French, Latin, and expression.

English—comprising composition, rhetoric, and literature—may be studied throughout the course. It is required during the preparatory years and the first three years of the collegiate department. The preparatory students review English grammar, and study the works prescribed for entrance to the New England colleges. The theory and practice of rhetoric are taught throughout the Freshman year, and the application of rhetorical principles is sought in themes and illustrative readings. The Sophomores make a critical study of certain prose masterpieces and write essays and various short papers. The required work of the Juniors consists of a study of the great English poets from Chaucer to Tennyson. Collateral reading is supplied, and students are encouraged to special investigation along literary and historical lines. In the Senior year electives are offered at present in literature and themes. In 1901 work in historical English and argumentation may also be taken. In the new courses three years of foreign language study are required for graduation, one preparatory and two advanced. It is desirable that two of the three years be spent upon one language.

A three years' course in German has been arranged, which may be begun in either the Freshman or Sophomore year. As far as possible the language itself is made the medium of instruction, and the subject is studied in grammar work, dictation, conversation, and translation—from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts.

French is begun in the preparatory year and may be studied three years. Seven courses are offered. The instruction in this language is similar to that given in German. Grammar, conversation, dictation, translation, and composition are taught.

Latin is elective except in the preparatory department. The college offers a two years' course. Should a student wish to pursue the subject farther, he may do so at his own expense, by taking private lessons of the instructor. Much attention is paid to derivation of words, in order that such study may aid in comprehending the terminology of science.

The aim of the course in expression is to teach one to read easily and intelligently, and to think accurately and rapidly. The work consists of sight reading, extemporaneous speaking, recitations, the delivery of original orations, and the study of various forms of poetry and prose. Expression is elective throughout the course.

In the building of Lippitt Hall excellent accommodations were provided for the library. Students now have freer access to the books than was possible before, and the library is proving a valuable addition to the educational facilities of the college.

HISTORY AND POLITICAL SCIENCE.

The courses in history and political science cover five terms, and are elective for Juniors and Seniors.

A continuous course in United States history is offered during the fall and winter terms. The library is well equipped in this department, and is made much use of, in reports and essays, by the pupils.

Political science I, offered in the fall term, consists of a study of the origin, development, and present structure of our government—town, city, county, State, and national. Special attention is paid to municipal problems, and to the United States constitution. Extensive use of the library is necessary. The winter and spring terms are devoted to political economy, based upon Walker's Advanced Course. In the spring term special consideration is given to the application of the general principles to banking, finance and other present day problems.

MATHEMATICS.

Three courses in mathematics are prescribed for all candidates for a degree; the subjects being higher algebra, plane trigonometry, and solid and spherical geometry. The work extends through-a basis for further work in mathematics and science, and as means for developing the power of logical reasoning and of exac and concise expression. It is the aim throughout the course t select such problems and applications as shall have direct bearin upon practical subjects.

Courses in analytical geometry and calculus are required o students in the mechanical and physics-mathematical courses, i addition to the above, and a number of electives are open to stu dents who propose to make a specialty of mathematics or of an of the sciences which depend largely upon it.

The course in analytical geometry includes the subject of lo and their equations, the analytical demonstration of many ge metrical theorems, and the simpler properties of the conic sectio The work in calculus includes the differentiation of algebraic, tri onometric, anti-trigonometric, exponential and logarithmic fun tions, successive differentiation, and the integration of sim functions, illustrated by applications to the rectification of pla curves, the areas of plane curves and the surface and volume solids of revolution. The fundamental formulas of mechanics a developed and illustrated. The more familiar devices for integra tion are studied, and a short time is devoted to the interestin subject of curve-tracing.

Students wishing to prepare for advanced work along the line of mechanical or electrical engineering are especially advised t elect the courses offered in advanced integral calculus, analytic mechanics, and differential equations, while those who desire a insight into the development of modern pure mathematics ma elect work in projective geometry, modern analytical geometry theory of equations, and theory of functions.

Two elective courses are offered in astronomy, one in practic astronomy, in which the simpler problems of practical astronom are discussed, and a lecture course in physical astronomy, the ai of which is to make the students familiar with the general ch acteristics of the various members of the solar system, and to e phasize the general laws which govern the universe. A four-in

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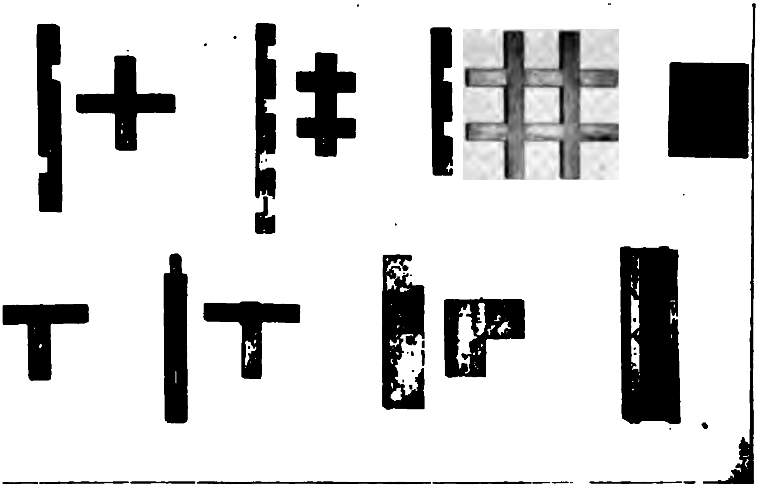
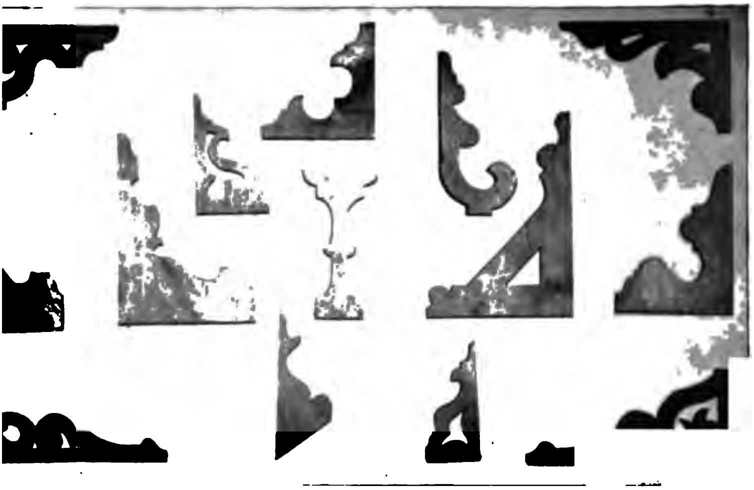


COURSE OF JOINERY.



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torial telescope, an eighteen-inch celestial globe, a large col- on of lantern-slides of astronomical phenomena, and a small arefully chosen reference library, add greatly to the resources e department.

civil engineering three courses are offered. Plane surveying ken up by the agricultural Sophomores in the spring term, and lowed by a course in leveling, grading, and road construction ng the first term of the Junior year. This work is supple- ed by practice with the compass, chain, and transit in meas- g areas and plotting land, as well as work with the levels, ing profiles, and establishing grade lines for roads. More nced work in engineering is offered the Seniors in the spring , while throughout the course practical surveying is given e students desirous of doing extra work in this line.

MECHANICAL ENGINEERING.

he aim of this department is to give sound theoretical and ough practical training to students who seek to prepare themes for useful and responsible positions. No attempt is made each trades; but the course offered in shop-work will furnish h training as will ensure, other things being equal, marked ess in mechanical pursuits subsequent to graduation. The ular four years' course deals with mechanical engineering as licable to the industries carried on in New England, and par- larly in Rhode Island. Special attention is given to the de- is and the economical operation of shops and mills, and of ufacturing and industrial machinery. Thorough courses in hematics, physics, chemistry, electricity, English, French, and man are made the basis of this work. The subjects of mech- m, metallurgy, heating and ventilation of buildings, engineer- specifications, and laws of contracts are treated by lectures text-books. The several laboratories are well equipped for king in wood and metals and for the testing of materials used onstruction. Students in the department of mechanical en- eering receive instruction in bench-work in wood, wood-turning, pattern-making, forging, machine-shop work, and mechanical drawing.

Students in the agricultural department receive instruction in wood-working and forging, and may elect other work with the advice and consent of the committee on studies. Women are given the opportunity to elect wood-carving at any time during the four years' course. During the winter term of three months, the shops are open to receive persons who may wish to enter the college and take up special work of a trade nature in any of the above lines. In addition to this work, these students may take a limited amount of time for the study of any related subject.

The carpenter shop contains benches and tools sufficient to accommodate twenty-four students at one time. The course is designed to give skill and confidence in working the various kinds of wood, and also to impart a fair knowledge of the principles of building and construction. A series of practical lectures upon the art of estimating the cost of various constructions of wood is given to the agricultural students of the Sophomore year. The wood-turning room contains thirteen lathes, each with its complete set of gouges and turning-tools. In the same room are benches for pattern-making, and also power machinery for working wood; such as circular saw, hand saw, jig saw, surface planer, buzz planer, mortising machine, dowel machine and others. All students take wood-turning, and during the period each has practice under the direct charge of the engineer in care of the shop's boiler and engine. This engine is of thirty horse power; and besides furnishing power for the shop, drives a ten K. W. dynamo for lighting the building. The work in pattern-making given to the students in the mechanical department in the Junior year consists of the making of selected pieces to illustrate the principles of shrinkage, drafts, finish, core-box making, built-up work, and the general requirements of pattern-making.

The forge shop will accommodate twelve students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the hammers, tongs, and

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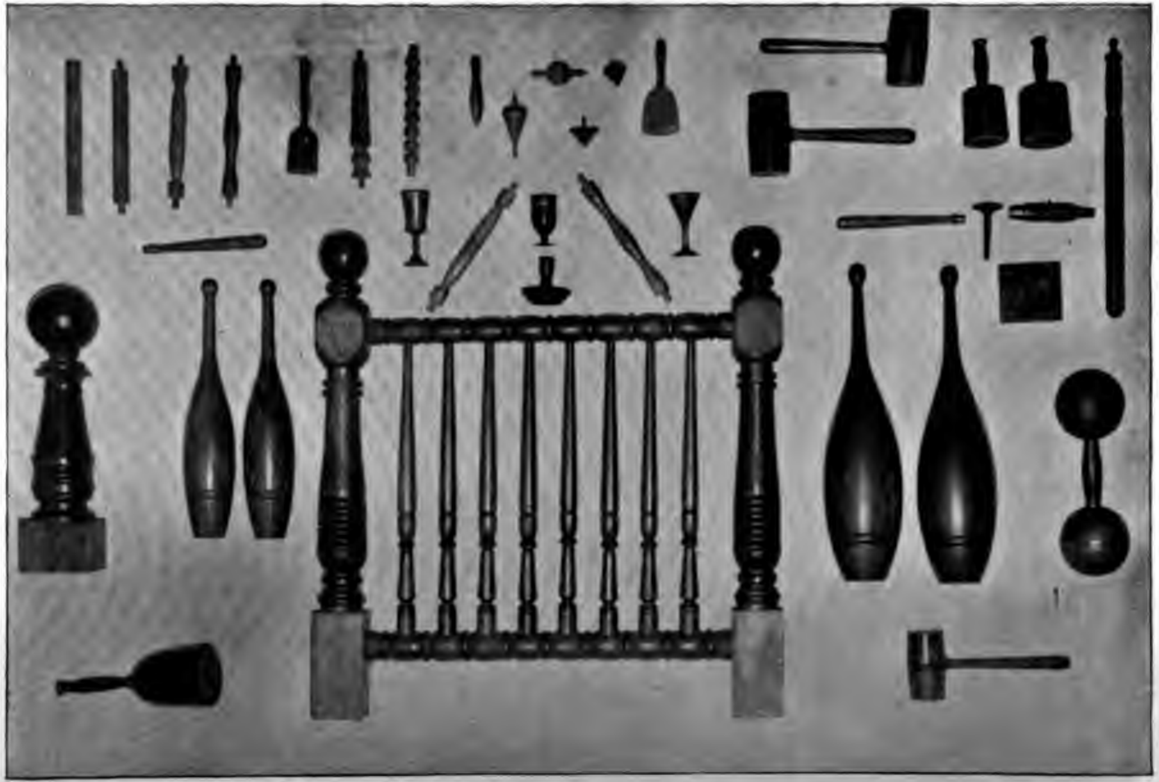

COURSE IN WOOD-TURNING.

THE CARPENTER SHOP.

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THE WOOD-WORKING MACHINERY.

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PATTERN-MAKING.

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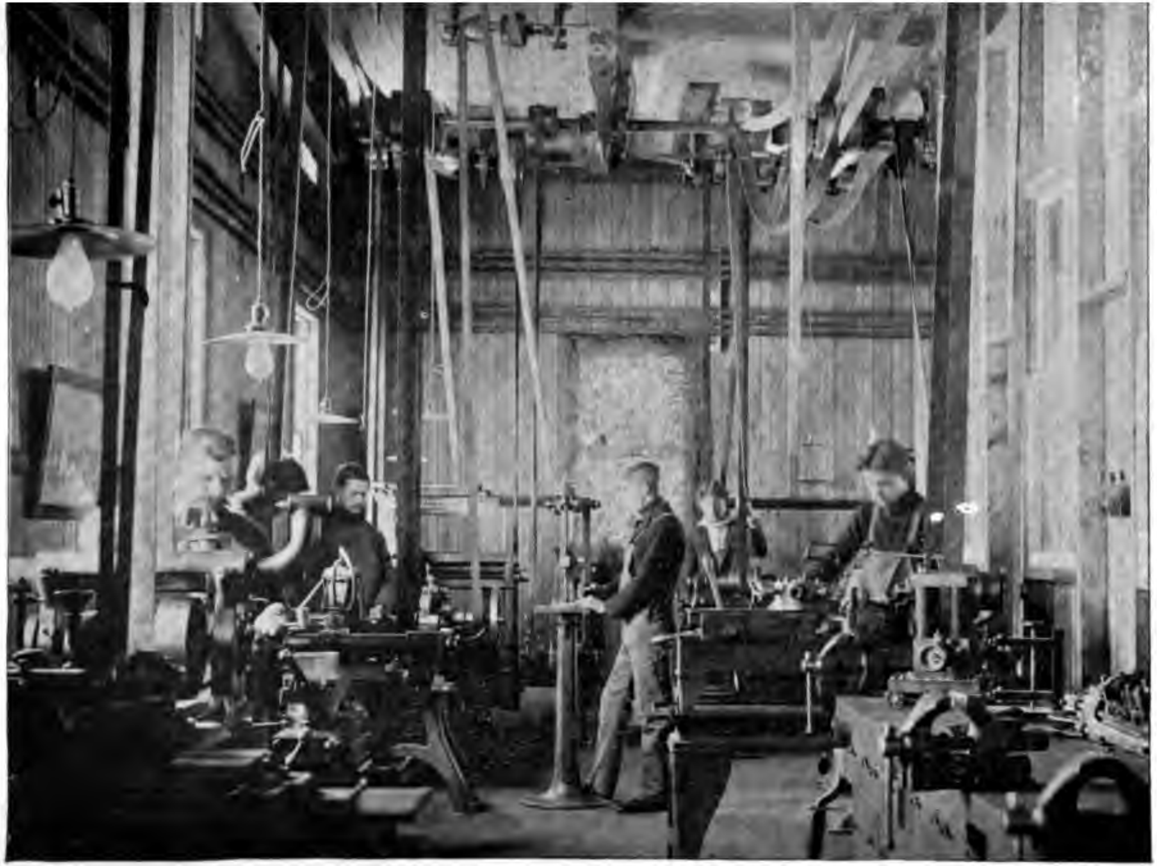

MACHINE SHOP.

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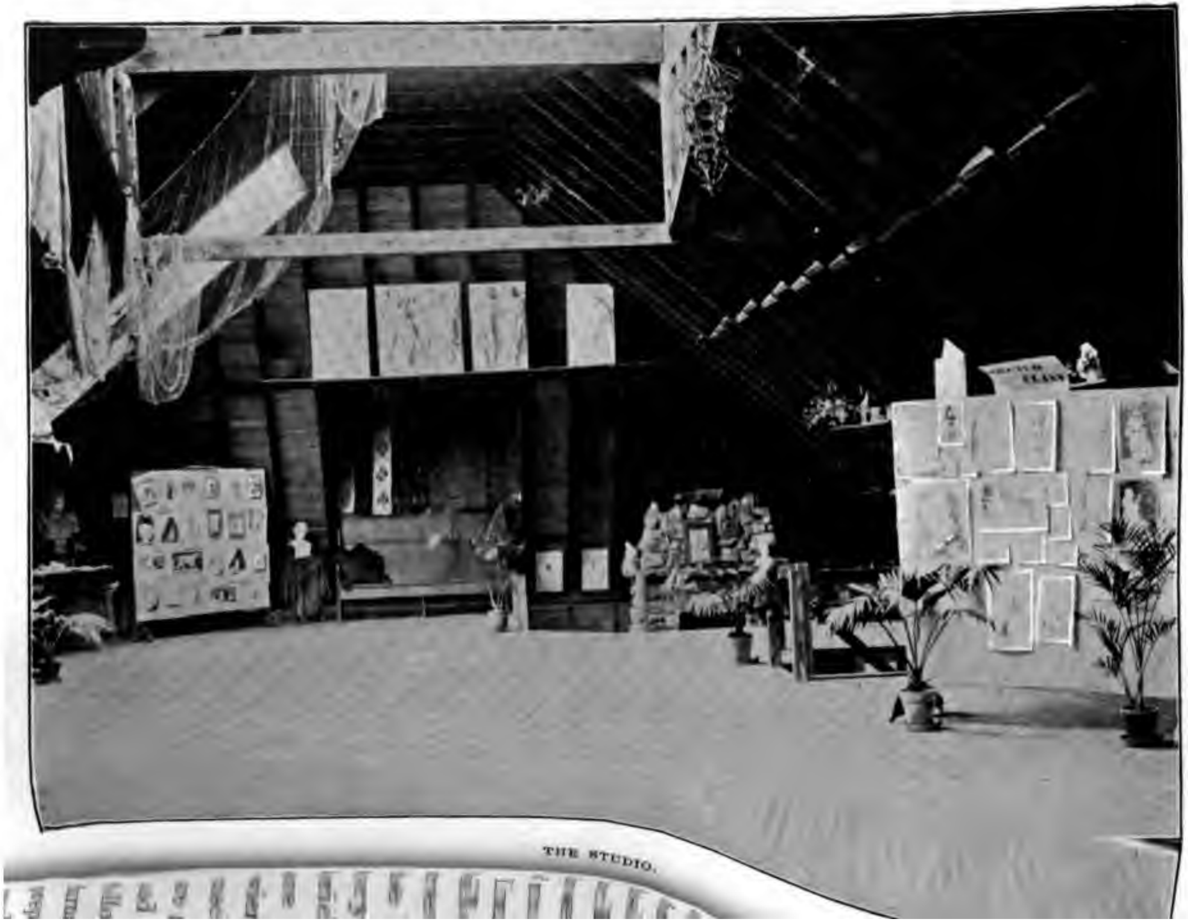


other forge and anvil tools necessary for complete work. A regular course is followed here as in other lines; and for the students of the agricultural department the work is of such a nature as is found about a farm. The various operations of drawing, bending, upsetting, and welding are taught and applied in the making of such useful pieces as staples, hooks, chains, and iron work for farm tools. The students of the mechanical department follow a similar course but in a direction more suited to the machine shop. Bolts, nuts, machine forgings, chisels, and lathe tools are made, and afterward put to practical use.

Only students in the mechanical department work in the machine shop. The course here is designed to give a sure knowledge of and intelligent practice in the best modern methods of using the various tools; such as, lathes, planers, drills, milling-machines, and grinding machines. A course of hand work at the bench is offered, and includes instruction in chipping, filing, scraping, and finishing. Each student in the machine shop builds a complete machine before finishing the course. Students of former years have made an engine, dynamo, speed lathe, full set of arbors, set of nut arbors, and a variety of other tools.

In experimental engineering the students make tests of engines, boilers, pumps, steam gauges, injectors and a hydraulic ram. The strength of materials is investigated theoretically in class under the head of mechanics of materials, and practically in the laboratory by conducting tests upon specimens of wood, iron, steel, brick, stone, cement, boiler plate, etc. In hydraulics, water meters are calibrated and measurements of water made by orifices and wiers. During the spring term of the Senior year the class in mechanical engineering holds semi-weekly conferences; reports are given upon articles in the industrial magazines and journals, and engineering subjects of general interest are discussed. The following are some of the topics considered: types of steam boilers, furnaces, boiler feeders, fuels, lubricants, gas and heat engines, preparation and use of wood, cutting tools for metals, pumping machinery.

Mechanical drawing is taught throughout the Sophomore Junior years. Students are required to keep notebooks, in wl freehand sketches are made from models; and these sketches afterward worked up into finished drawings. The makin working drawings for some machine completes the course. P tice in tracing and blue printing is given to all students. course in drawing is designed to aid in the corresponding cou of shop work and not to produce professional draughtsmen.

FREEHAND DRAWING.—Freehand drawing is taught only in fall and spring term, and is required in the fall term, Fresh year. The required work comprises the study of perspective especially of values from objects, still life, and simple c Memory sketches of all objects drawn are expected of each dent. The sketch class is an interesting feature of the departm This meets for one hour once a week and is conducted by its m bers, who pose in turn or find a substitute. These time sket from life, without instruction, are of great benefit to the stud teaching him to note quickly the effect desired. Each stude required to leave at the college a specimen of his work. library of the studio has a good nucleus of art books.

In addition to the art electives, comprising drawing from and the cast, painting in oil, pastel and water color, modeling, the history of art, special work will be arranged for scientific mechanical students.

MILITARY SCIENCE AND TACTICS.

The military department is duly organized under Captain liam W. Wotherspoon of the 12th Infantry, who was assigne duty as professor of military science and tactics, by the presi of the United States, by special orders No. 257, from the war partment, dated November 1, 1894.

It is the intention of the United States government, in orga ing the military department at colleges, to prepare the young of the country to perform with skill and understanding those

STUDENTS IN DRILL HALL.

which will fall upon them in time of national trouble, iem to take positions as officers in the national guard ›ers. The course consists of both practical and theouction in the duties of a soldier.

actical course, which consists largely of drill, both as l artillery, particular attention is devoted to the physiment of the students. No effort is spared to instill into ι sense of the importance of the work undertaken, and ɡ them that quickness and readiness to obey which is y to a soldier, to insure a proper and healthful carriage γ. All male students in good health are required to urse, for which purpose they are organized into a bat'o companies of infantry, from which four batteries of ɔ selected and two classes in military signalling.

ts have been uniformed at a very moderate expense, in handsome uniform of fine blue cloth, consisting of a trousers cut after the pattern worn by the U. S. naval ι forage caps holding the coat of arms of the State of nd. This uniform is not only handsome and economih moderate care will last a long time.

ities for the military course are excellent. The land ollege is of such a character as to permit of the illusmany of the minor operations of war. The campus nusually good drill ground; and for indoor drill, during reather, the college has one of the largest drill halls, argest, of any institution of learning in the country.

PHYSICAL TRAINING.

ıg women have opportunity to exercise in the gymnaıst three times a week. Once a week all the young ət for gymnasium work, which is conducted by Miss 3rooks of the Boston Normal School of Gymnastics. es under the same direction are arranged for further s subject. All the young women are required to take . work, unless physically disabled.

COURSES OF INSTRUCTION.

The following courses of instruction are offered in the differen departments. All studies required of regular students lead to th degree of Bachelor of Science.

CHEMISTRY.

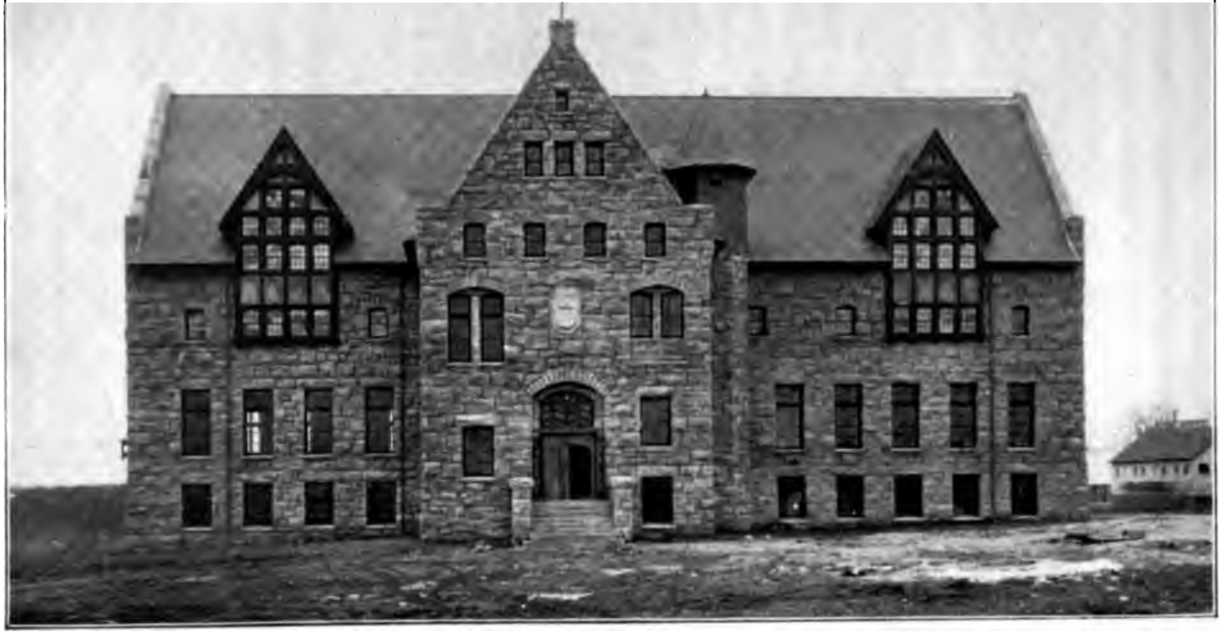
I. General Chemistry, Briefer Course.—Non-metals. Recitations, lectures and laboratory work. *Spring term, Sophomore year ;* recitations and lectures, *3 exercises per week ;* laboratory work, *1 exercise of 2 hours per week. Required of all candidates for a degree.*

II. General Chemistry.—Metals. Lectures and laboratory work. *Fall term, Junior year ; 3 exercises per week. Required of all candidates for a degree.*

III. Qualitative Analysis.—Laboratory work. *Fall term, Junior year ; 2 exercises of 2 hours each per week ; Winter term, 2 exercise of 3 hours each per week. Required of all candidates for a degre*

IV. Organic Chemistry.—Lectures, recitations and laborator work. *Winter term, Junior year ; 4 exercises per week. Require of Agricultural students.*

V. Organic Chemistry.—Lectures and laboratory work. *3 e ercises per week. Elective ; open to students who have taken cour se IV.*



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VI. Agricultural Chemistry.—Lectures and laboratory work. *pring term, Junior year; 3 exercises per week.* Laboratory work. *all term, Senior year; 2 exercises of 3 hours each per week. Re-ired of Agricultural students.*

VII. Quantitative Analysis.—Laboratory work. *Spring term, enior year; 2 exercises of 3 hours each per week. Required of gricultural students.*

VIII. Courses in Theoretical or Sanitary Chemistry or Quan-ative Analysis.—Laboratory work. *Throughout the Senior year; xercises of 3 hours each per week. Elective; open to students who e taken courses I and II.*

IX. Dyeing of Textile Fabrics.—*Winter and spring terms, ior year; three exercises per week. Elective; open to students o have taken courses IV and VII.*

PHYSICS.

I. General Course.—Study of sound and heat, *Fall term;* elec-icity and magnetism, *Winter term;* light, mechanics, hydraulics, d pneumatics, *Spring term, Freshman year;* recitations, *3 ex-cises per week;* laboratory work, *1 exercise per week. Required all candidates for a degree.*

II. Advanced Physics.—*Throughout the year;* recitations, *1 ercise per week;* laboratory work, *2 exercises per week. Elective; en to students who have taken course I.*

III. Advanced Electrical Work.—A course of lectures upon ectrical measurements, testing of instruments, dynamos and tors. *Throughout the year.* Lectures, *2 exercises per week;* boratory work, *1 exercise per week. Elective; open to students who ve taken course II.*

IV. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Throughout the year;* lectures, *2 exercises per week;* laboratory work, *1 exercise per week. Elective; open to students who have taken course III.*

V. Elementary Photography.—A course of lectures and recitations upon the optics and chemistry of photography, together with practical photographic work. *Spring term;* lectures, *2 exercises per week;* laboratory work, *2 exercises per week. Elective; open to all students.*

VI. Advanced Photography.—A course of lectures on photomicrography, the making of lantern slides and bromide enlargements, and the manipulation of the optical lantern. *Spring term;* lectures, *2 exercises per week;* laboratory work, *2 exercises per week. Elective; open to students who have taken course V.*

PHYSIOGRAPHY.

Tarr's Physical Geography, with required reading from reference books. Laboratory work and excursions. *Fall term, Freshman year; 4 exercises per week. Required of all candidates for a degree.*

GEOLOGY.

Agricultural Geology.—Lectures and recitations. *Winter term of Senior year; 2 exercises per week. Required of Agricultural students, elective for Mechanical students.*

BOTANY.

I. Biology of Plants.—The general principles of biology are illustrated by our common plants. Laboratory, reading and lectures. *Winter and Spring terms, Freshman year, and Fall term, Sophomore year; 3 exercises of 2 hours each per week. Required of students in the Agricultural, Biological and Chemical courses.*

II. Fungi.—A study of fungi with special reference to parasitic forms of economic importance. Laboratory, reading and lectures. *Elective; open to students who have taken course I. Hours arranged with instructor.*

III. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *Elective; open to students who have taken course I. Hours arranged with instructor.*

IV. A study of the Spring Flora of Kingston, with practice in the identification of species. Field and laboratory, *Spring term: 1 exercise per week. Elective; open to students who have taken course I.*

By consulting the instructor other arrangements may sometimes be made for those desiring to elect work in botany.

ZOÖLOGY.

I. Biology of Animals.—Instruction in animal biology embraces a careful treatment, through the laboratory, lecture and text-book, of the general anatomical, physiological and developmental phenomena of animal life; the conditions and the causes of the broad manifestations of life, in the cell, in the individual, and in the race. The types studied are: Amoeba, Paramoecium, Vorticella, Hydra, earthworm, fish, frog, cat and man. Among the questions dealt with are the meaning of such terms as protoplasm, nutrition, growth, reproduction, life, death, the physiological division of labor, heredity, the views held by the different schools of evolutionists, the variation of species, effect of environment, natural selection, parasitism, and geographical distribution. In brief, it is a course adapted for the general student who wishes a knowledge sufficient to comprehend and to profit by the important current discussions bearing upon man's relations to his environment; at the same time, it gives a broad foundation for one who plans to enter a career in biological science, either as a teacher, investiga-

II. Zoölogy of the Farm Animals.—A study of the anatomy and physiology, comparative anatomy, embryology and phylogeny of the horse, cow, sheep and pig. (Including reference to parasites and diseases.) *Fall term, Junior year; 3 exercises per week. Required of Agricultural students.*

III. Zoölogy of Farm Animals.—(*a*) Zoölogy of the domestic fowls. *Winter term, Junior year; 6 weeks (one-half term), exercises per week.* (*b*) The principles and practice of aquiculture, (applied zoölogy). With special reference to utilization ponds, ditches, coast, and waste places on the farm, for growing crops of food animals. *6 weeks (one-half term); 3 exercises per week.*

IV. Entomology. *Fall term, Junior or Senior year; 3 exercises per week.*

V. Comparative Animal Physiology.—(Including histology; for advanced students only. Prerequisites, organic chemistry, and all previous courses in zoölogy). *Senior year; 3 exercises per week.*

VI. The Spring Fauna of Kingston, as complementary to the course on the Spring Flora. *Spring term, 1 exercise per week. Elective.*

For additional courses in comparative normal histology, in comparative anatomy of the vertebrated animals, in comparative embryology, and in the phylogeny of animals, special arrangements may be made with the instructor.

PSYCHOLOGY.

Elementary Course.—Lectures, recitations, simple laboratory experiments. *Winter and Spring terms; 3 exercises per week. Elective for Juniors and Seniors.*

AGRICULTURE.

I. Introduction.—Definition of terms; origin and necessity of agriculture; relations of agriculture to other industries; agriculture as an occupation; education for agriculture; the atmosphere and sunshine in relation to agriculture; plant and animal life in agriculture. *Spring term, Freshman year; 2 exercises per week. Required of Agricultural students.*

II. Soils.—*The origin, formation, and deposition of soils are studied under physiography; the composition, mechanical and chemical analysis under agricultural chemistry; the physical properties and relations under soil-physics.* Agricultural Soils.—Definition; function; variation; classification; adaptation; location; examination; faults; improvement and preparation; clearing land; grading; mixing soils; paring and burning; reclaiming land; irrigation. *Fall term, Sophomore year; 2 exercises per week for one-half term. Required of Agricultural students.*

III. Land Drainage (Waring).—Sources of water; necessity of drainage; kinds of drains; action of drains; planning system of drainage; drain tiles; construction and care of drains; cost and value of drains; sanitary effects of drainage. *Fall term, Sophomore year; 2 exercises per week for one-half term. Required of Agricultural students.*

IV. Agricultural Apparatus and Constructions.—Farm tools; implements; machines and vehicles; farm buildings; fences; roads and bridges—arrangement, construction, care and maintenance. *Winter term, Sophomore year; 3 exercises per week. Required of Agricultural students.*

V. Farm Fertilization.—Introduction; classification of manures, atmospheric, mineral and organic; manurial sources of potash, lime, magnesia, soda, iron, phosphates and nitrogen salts; stable manure, composition and management; animal manures; liquid manure; farm sewage; guanos; fish fertilizers; animal refuse; peat; green manuring; sea-weeds; vegetable refuse and by-products; composts; divisors for manures; application and action of manures; valuation of manures. *Spring term, Sophomore year; 2 exercises per week. Required of Agricultural students.*

VI. Field Crops.—Balancing of farm; rotation of crops; grass-land; wood-land; tillage-land; preparation of land, planting cultivating, harvesting, storing and disposal of crops; special consideration of the hay crop, fodder crops, Indian corn, potatoes, root crops, field and garden vegetables; weeds. *Fall term, Junior year; 2 exercises per week. Elective.*

VII. Breeds of Farm Animals (Curtis).—Origin, history, characteristics and adaptability of the leading breeds of the horse, neat cattle, sheep, swine, and poultry; scoring; tracing pedigrees; breeders' associations. *Fall term, Senior year; 2 exercises per week. Elective.*

VIII. Breeding of Live Stock.—The principles of breeding; heredity; atavism; correlation; variation; fecundity; in-breeding; cross-breeding; relative influence of parents; sex; pedigree; form; selection; the breeding, care and management of the horse, neat cattle, sheep, swine, and poultry. *Fall term, Senior year; 3 exercises per week. Elective.*

IX. History of Agriculture.—Agriculture in relation to civilization; fisher and hunter-folk; nomads; tillers of the soil; development of tillage; history of the plow; crop rotation; irrigation; fertilization; general and special farming; agricultural education; agricultural experimentation; evolution of farming implements; the farm and the farmer to-day. *Fall term, Senior year; 2 exercises per week. Elective by special arrangement.*

X. Feeding of Farm Animals.—Principles of rational feeding; animal body, composition, processes of digestion, assimilation, and excrementation; feeding stuffs, composition and digestibility; nutrients; feeding standards; formulating rations; selection of feeding stuffs; preparation of food; methods of feeding; utility of shelter; special feeding of horse, cow, sheep, swine, and poultry. *Winter term, Senior year; 3 exercises per week. Elective.*

XI. Dairy Husbandry.—Breeds and breeding of dairy cattle; barns and dairy buildings; milk production, composition; management, aeration, pasteurization, sterilization, testing, transportation, and marketing; creaming; butter-making; cheese-making; milk-preservation, condensed milk, milk-sugar, etc., milk-preparation for infants and invalids; dairy bacteriology. *Winter term, Senior year; 3 exercises per week. Elective.*

XII. Poultry Raising.—Domestic fowls—kinds, breeds, selection, and breeding; buildings—location and arrangement, construction and furnishing, ventilation, yards and parks; foods and feeding, care and management, production of eggs and flesh, fattening; dressing and marketing; incubation, natural and artificial; rearing; diseases and enemies; caponizing; records and accounts; special management of turkeys, geese, ducks, and pigeons. *Winter term, Senior year; 2 exercises per week. Elective.*

XIII. Agricultural Economics.—The mutual relations of agriculture and the body politic; the position of agriculture; independence of agriculture; State intervention; legislation; tariff; bounties; taxation; insurance; credit; rewards; census; moral and social aspects of agriculture; division and distribution of farms; size of farms; extensive and intensive farming; ownership of land; inheritance; nationalization of land; government lands; colonization; agricultural laborers, machinery, experimentation; education; association; coöperation; press; agricultural improvement; reclamation and irrigation of land; diversification of products. *Winter term, Senior year; 2 exercises per week. Elective by special arrangement for students who have taken Agriculture IX.*

XIV. Agricultural Literature.—An opportunity to read and study in any special line of agriculture for which the student is bulletins of the agricultural experiment stations. *Winter term, Senior year; 2 exercises per week. Elective by special arrangement.*

XV. Farm Management.—Introduction and definitions; farming requisites; farm production and market relations; capital—permanent, floating and perishable—distribution in land, buildings, apparatus, live stock, and supplies; labor and power; machinery; kind of farming; size of farm; system of farming; ownership or rental of farm; maintenance and management; returns and results; inventory, and balancing of accounts. *Spring term, Senior year; 5 exercises per week. Elective.*

XVI. Farm Accounts and Records.—The principles and methods of book-keeping in their application to the keeping of farm accounts; diary; note-book; calendar; records and accounts of special departments, crops, fields, and animals; calculations; estimates, and valuations; inventories. *Spring term, Senior year; 1 exercise per week. Elective.*

XVII. Farm Law.—The legal rights and liabilities of farmers; purchase and sale of farm, forms of deeds; rental of farm, terms of lease; boundaries and fences; overhanging trees; water rights and drainage; ways over the farm; rights in the highway; roadsides; live stock; dogs; game; trespass; theft; fires; insurance; employing laborers; liability of employer and employed; contracts; mortgages; notes; taxes; exchange, sale, and purchase; contagious diseases of live stock and crops. *Spring term, Senior year; 1 exercise per week. Elective by special arrangement.*

XVIII. Apiculture.—A study of the habits, care, breeding, and management of the honey-bee, with practical work in the apiary. *Spring term, Senior year; 1 exercise per week. Elective by special arrangement.*

XIX. Agricultural Debate.—Discussion in the form of regular parliamentary debates upon leading agricultural questions. *Spring term, Senior year; 1 exercise per week. Elective.*

XX. Agricultural Experimentation.—A study of the objects, principles, and methods of agricultural experimentation. Opportunity will be given for practical participation in the work of the Experiment Station to those students who arrange to continue this work through the experimental season. *Spring term, Senior year; 2 exercises per week. Elective by special arrangement.*

HORTICULTURE.

I. Principles of Horticulture.—A discussion of fundamental principles underlying horticultural operations in orchard, garden, and greenhouse. *Fall term; 3 recitations and 1 laboratory period per week. Required of Agricultural students.*

II. Pomology.—Lectures and supplementary reading. Designed to give practical instruction in fruit growing. *Winter term; 3 exercises per week. Elective.*

III. Vegetable Gardening.—Methods of growing garden vegetables in the open ground and under glass. *Winter term; 3 exercises per week. Elective.*

IV. Landscape Gardening.—The principles underlying landscape gardening as a fine art, with discussion of the ornamentation of home-grounds, school-grounds, cemeteries, parks, highways, and other public grounds. Lectures and supplementary reading. *Fall term; 3 exercises per week. Elective.*

V. Forestry.—General importance of forests, their influence on climate and water supply, methods of regeneration, and systems of forest management. Lectures and supplementary reading. *Winter term; 2 exercises per week. Elective.*

VI. Plant Breeding.—A discussion of the development of plants under culture, with especial reference to problems of heredity, environment, variation, selection, and evolution. Lectures and supplementary reading. Open to students who have had course I in botany. *Fall term; 2 exercises per week. Elective.*

familiarity with horticultural writings, ancient and modern. *arrangement. Elective.*

VIII. Original Investigation.—For advanced students only. *y arrangement. Elective.*

ENGLISH.

I. Elementary Course.—Grammar; composition; study of college preparatory English. *Fall term of first year; 6 exercises per week; Winter and Spring terms, 5 exercises per week; throughout the second year, 3 exercises per week. Required of all students in the Preparatory department.*

II. Rhetoric.—Text-book study and practical application of rhetorical principles in theme work and illustrative readings. *Two exercises per week throughout the Freshman year. Required of all candidates for a degree.*

III. Critical study of certain prose masterpieces, with essays and various short papers.—*Two exercises per week throughout the Sophomore year. Required of all candidates for a degree.*

IV. General English Literature.—Topical study. Essays and collateral reading required. *Four exercises per week; Winter and Spring terms, Junior year. Required of all candidates for a degree.* After 1900 this course will be given in two exercises per week throughout the Junior year, and will be required of all candidates for a degree.

V. Special English Literature.—Study of special periods and authors. *Three exercises per week throughout the year. Elective; open to students who have taken courses I–IV or their equivalent.*

VI. Historical English.—*Two exercises per week throughout the year. Elective; open to students who have taken courses I–V or their equivalent.*

VII. Argumentation.—*Two exercises per week; Fall ter Elective; open to students who have taken courses I–IV or th ivalent.*

VIII. Special Work in Themes.—*Throughout the year. Elective; open to students who have taken courses I–IV or their equivalent.*

GERMAN.

I. Elementary Course. — Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the Freshman year; 5 exercises per week. Required of all candidates for a degree who do not offer French.* In 1899 this course will be required of all Juniors.

II. Reading of intermediate texts, composition, conversation. *Fall term, Sophomore year; 3 exercises per week. Open to students who have taken course I or its equivalent, and required of all candidates for a degree who do not offer French.*

III. German Classics.—*Winter and Spring terms; 3 exercises per week. Open to students who have taken courses I and II or their equivalent, and required of all candidates for a degree who do not offer French.*

IV. Scientific German.—*Winter and Spring terms; 2 exercises per week. Elective; open to students who have taken course I or its equivalent.*

V. Sight-Reading.—*Throughout the year; 1 exercise per week. Elective; open to students who have taken courses I–III or their equivalent.*

VI. Goethe's Meisterwerke (Bernhardt).—*Fall term; 3 exercises per week. Elective; open to those who have taken courses I–III or their equivalent.*

VII. Study of Schiller or Heine.—*Winter term; 3 exercises per week. Elective; open to those who have taken courses I–III or their equivalent.*

VIII. Study of Freytag.—*Summer term; 3 exercises per week. Elective; open to those who have taken courses I–III or their equiva-*

FRENCH.

I. Elementary Course. — Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the year; 5 exercises per week. Required of all Freshmen not electing German and not offering French for admission.*

II. Reading of intermediate texts, composition, conversation.—*Throughout the Sophomore year; 3 exercises per week. Required of all candidates for a degree who do not offer German.*

III. Scientific French.—*Spring term, Sophomore year; 2 exercises per week. Elective; open to students who have taken course I or its equivalent.*

IV. French Classics.—*Throughout the year; 3 exercises per week. Elective; open to students who have taken courses I–III.*

V. Sight-Reading.—*Throughout the year; 1 exercise per week. Elective; open to students who have taken courses I–III.*

VI. Lyrics of the Nineteenth Century.—*Two exercises per week. Fall term. Elective; open to those who have taken courses I–III or their equivalent.*

VII. Study of Victor Hugo.—*Winter term, 2 exercises per week. Elective; open to those who have taken courses I–III or their equivalent.*

LATIN.

I. Elementary Course.—Grammar, composition, easy reading. *Throughout the year; 5 exercises per week. Required of students in the Preparatory department.*

II. Selections from various Latin authors, or Cæsar.—*Throughout the year; 3 exercises per week. Elective.*

EXPRESSION.

I. Elementary Work in Reading.—Elements of speech, articulation, and sight-reading. *Throughout the Preparatory year; 1 exercise per week. Required.*

II. Reading.—The cultivation of ease and naturalness. Study of narrative poetry and prose. *Throughout the Freshman year; 1 exercise per week.*

III. Reading and Recitations.—Study of various forms of poetry and prose. *Throughout the Sophomore year; 1 exercise per week. Elective.*

IV. Study of the Drama.—Critical reading of some standard play, with the memorizing and acting of scenes. Extemporaneous speaking required. *Throughout the Junior year; 1 exercise per week. Elective.*

V. Study of Shakespeare.—Two extemporaneous speeches and one oration required each term. One debate during the year. *Throughout the Senior year; 1 exercise per week. Elective.*

VI. Advanced Elective.—*Throughout the year; 3 exercises per week. Open to those who have taken courses I and II.*

HISTORY AND POLITICAL SCIENCE.

I. Constitutional and Political History of the United States. Based on "Epochs of American History."—Lectures, recitations, readings, and reports. *Fall and Winter terms; 3 exercises per week. Elective for Juniors and Seniors.*

II. Science of Government.—Town, city, country, state, and United States. Their origin, development, and practices. Critical analysis of the Constitution of the United States. Lectures, recitations, and reports. *Fall term; 3 exercises per week. Required of all candidates for a degree.*

III. Political Economy.—General principles. Based on Walker's Advanced Course.—Lectures, recitations, discussions, readings, essays. Consideration of present day problems. *Winter and Spring terms, Senior year; 3 exercises per week. Required of all candidates for a degree.*

MATHEMATICS.

I. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division, of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Preparatory department; 4 exercises per week throughout five terms.*

II. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Preparatory department; second year; 4 exercises per week.*

III. College Algebra (Taylor).—The theory of limits; differentiation; development of functions in series; permutations and combinations; probability. *Fall term, Freshman year; 4 exercises per week. Required of all candidates for a degree.* Elective for classes from 1899–1901, inclusive.

IV. Plane Trigonometry (Locke-Miller).—The derivation of the fundamental formulas; logarithms; the solution of right and oblique triangles; practical problems. *Winter term, Freshman year; 3 exercises per week. Required of all candidates for a degree.*

V. Solid Geometry (Wells).—Lines and planes in space; diedral angles; polyhedral angles; polyhedrons; the cylinder, cone and sphere; measurement of the cylinder, cone, and sphere; numerical examples and original demonstrations. *Spring term, Freshman year; 3 exercises per week. Required of all candidates for a degree.*

VI. Analytical Geometry (Loney).—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic sections; higher plane curves. *Fall and Winter terms, Junior year; 4 exercises per week. Required of students in the Mechanical, Physical, and Mathematical courses.*

VII. Calculus (Osborne).—The differentiation of algebraic, trigonometric, logarithmic, exponential, and anti-trigonometric functions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variable; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Winter and Spring terms, Junior year; and Fall term, Senior year; 3 exercises per week. Required of students in the Mechanical, Physical, and Mathematical courses.*

VIII. Curve Tracing.—Lecture course. The construction and elementary properties of simple plane curves; symmetry; diameters; limits; asymptotes. *Fall term; 1 exercise per week. Elective; open to students who have completed courses III and IV.*

IX. Synthetic Geometry (Dupuis).—The point, line, and circle; comparison and measurement of areas; proportion amongst line segments; collinearity; inversion; anharmonic division; homography. *Winter term; 3 exercises per week. Elective; open to students who have completed courses III and IV.*

X. Spherical and Higher Plane Trigonometry (Chauvenet).—The derivation and application of the fundamental formulas; trigonometric series; the construction of trigonometric tables. *Spring* *term ; 3 exercises per week. Elective ; open to students who have completed courses III, IV, and V.*

XI. Solid Analytical Geometry (Smith).—Theorems on the plane and the surfaces of the second degree. *Winter term ; 3 exercises per week. Open to students who have completed course VI.*

XII. Advanced Calculus (Byerly).—An extension of course VII, including a further discussion of definite integrals ; imaginaries, length of curves, areas, volumes, and the elements of elliptic integrals. *Spring term ; 3 exercises per week. Elective ; open to students who have completed course VII.*

XIII. Analytical Mechanics.—*Fall term ; 3 exercises per week. Elective ; open to students who have completed course VII.*

XIV. Courses in projective geometry, modern analytical geometry, differential equations, theory of equations, theory of functions, will be arranged as demand for them arises.

ASTRONOMY.

I. Physical Astronomy.—Lecture course, illustrated with copious lantern slides, observations with a four-inch telescope, and laboratory work with the sun spectrum and the spark spectrum, sufficient to give an insight into modern methods of astronomical work. *Spring term ; 3 exercises per week. Elective ; open to students who have completed Mathematics III, IV, and V.*

II. Practical Astronomy.—The use of instruments ; the determination of time, of latitude, of longitude. *Spring term ; 3 exercises per week. Elective ; open to students who have completed Mathematics VII and X.*

CIVIL ENGINEERING.

I. Plane Surveying (Carhart).—Elementary course, field work, recitation, and plotting. Use of compass, transit, and levels ; adjustment of instruments ; stadia surveying. *Fall term, Sophomore* *year ; 1 exercise per week of classroom work, 2 exercises of three hours each of field work per week. Required of Agricultural students.*

II. Civil Engineering.—Land, topographic and railroad surveying, the study of the use of engineer's tables. *Spring term ; 4 exercises per week. Required of Agricultural students.*

III. Road Construction and Leveling (Spalding).—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term, Junior year ; 3 exercises of text-book work and 1 exercise of three hours of field work per week.*

MECHANICS.

I. Strength of Materials (Merriman).—Strength of wood, steel, alloys, stone, brick, and cements. *Spring term, Junior year ;* recitations, *3 exercises per week ;* laboratory work, *1 exercise of 2 hours per week. Required of Mechanical students.*

II. Mechanism.—Rectilinear motion; rotary motion; transmission of motion. Lectures. *Spring term, Junior year ; 2 exercises per week. Required of Mechanical students.*

III. Mechanics of Engineering (Church).—Bodies in equilibrium and in motion ; work and power ; friction of rest and motion ; strength of simple beams, continuous beams, pipes and columns, arches. Recitations. *Fall term, Senior year ; 5 exercises per week ; Winter term, Senior year ; 4 exercises per week.* Graphic statics, hydraulics, and water-wheels. *Spring term, Senior year ; 5 exercises per week. Required of Mechanical students.*

IV. Steam Engineering (Kinealy).—Study of steam and its properties ; simple and compound engines ; steam boilers. *Fall term, Senior year ; 3 exercises per week. Elective.*

V. Metallurgy (Huntington).—Study of the manufacture of cast iron, wrought iron, and steel ; rolling-mill machinery ; metal-

lurgy of copper, tin, zinc, and silver; alloys. *Winter term, Senior year; 3 exercises per week. Elective.*

VI. Mechanical Drawing.—*Winter term, Sophomore year; 1 exercise of 2 hours per week. Elective.*

VII. Mechanical Drawing.—*Spring term, Freshman year; 1 exercise of 2 hours per week. Required of Agricultural students.*

VIII. Mechanical Drawing (Anthony).—*Throughout the Sophomore year; 2 exercises of 2 hours each per week. Required of Mechanical students.*

IX. Mechanical Drawing.—*Throughout the Junior year; 2 exercises of 2 hours per week. Required of Mechanical students.*

X. Mechanical Drawing.—Machine drawing and design. *Fall and Winter terms, Senior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

XI. Mechanical Drawing.—*Winter term, Freshman year; 1 exercise of 2 hours per week. Spring term, Freshman year; 2 exercises of 2 hours per week. Required of Mechanical students.*

XII. Descriptive Geometry (Faunce).—Notation and elementary principles; problems on the point, line, and plane; problems relating to the cylinder, cone, and double curved surface of revolution; intersection and development of planes and solids; practical problems. *Fall term, Junior year; 3 exercises per week. Required of Mechanical students.*

XIII. Wood-working.—Use of tools, bench work, and carpentering. *Winter term, Freshman year; 2 exercises of 3 hours each per week. Required of all Agricultural students.*

XIV. Wood-working.—*Winter term, Freshman year; 2 exercises of 3 hours each and 1 exercise of 2 hours per week. Required of Mechanical students.*

XV. Wood-turning.—Shop-work. *Fall term, Sophomore year;*

DRAWING AND MODELING.

I. Freehand Drawing. — Drawing from objects. Me sketches required. *Fall term, Freshman year; 1 exercise hours per week. Required of all candidates for a degree.*

II. Drawing in Charcoal from Still Life and the Ca *Fall and Spring terms, Sophomore year; 1 exercise of 2 hour week. Elective; open to students who have taken course I.*

III. Drawing from Life or the Cast, and Painting in Oil, P or Water Color.—*Fall and Spring terms, Junior and Senior y 2 exercises of 2 hours each per week. Elective; open to student have taken courses I and II.*

IV. Sketch Class.—Rapid sketching from life. *One exercis hour per week. Elective throughout the course. In the Junio Senior years 2 exercises per week may be taken.*

V. Modeling from Objects and Casts.—*Fall term, Junior Senior years. Elective; open to all courses.*

VI. History of Art.—Reading and lectures. *Spring t Junior and Senior years; 1 exercise of 1 hour per week. Elect open to all courses.*

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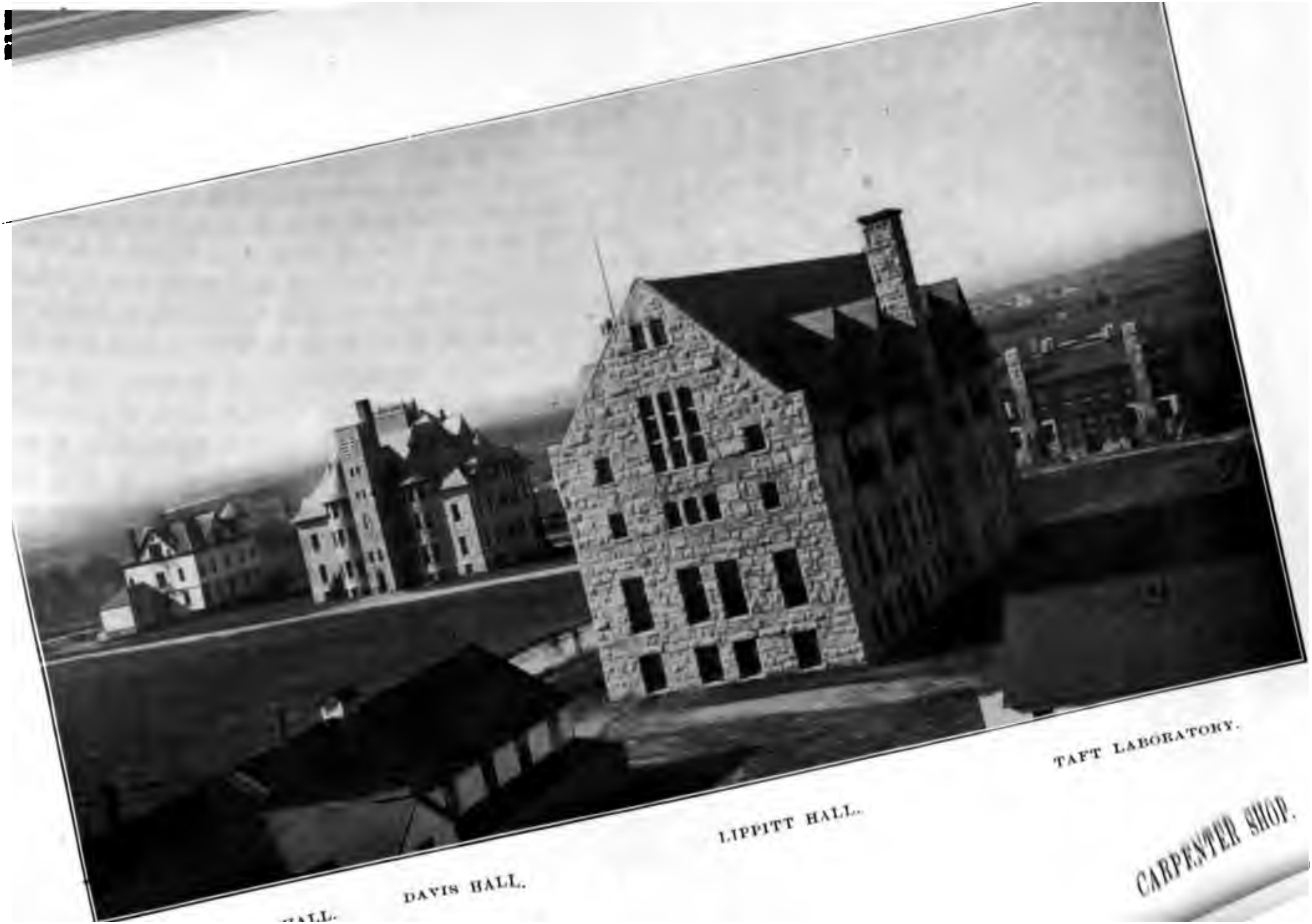

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CARPENTER SHOP.

COURSE OF STUDY

OF THE

R. I. College of Agriculture and Mechanic Arts, for the Classes of 1900 and 1901, inclusive.

JUNIOR YEAR.

FALL TERM.

Agricultural Course.	Exercises per week.	*Mechanical Course.*	Exercises per week.
Chemistry, II	4	Chemistry, II	4
Chemistry, III	2	Chemistry, III	2
German, I.	3	German, I	3
Civil Engineering, II	4	Mathematics, VI	4
Botany, II	3	Mechanics, XII	3
Horticulture	4	Mechanics, IX	2
Military Drill and Tactics, I	3	Mechanics, XXII	2
		Military Drill and Tactics, I	3

Electives—Physics, II. French, II. Latin, I, II. Mechanics, XXI. Drawing, IV, VI. Expression, III.

WINTER TERM.

Agricultural Course.	Exercises per week.	*Mechanical Course.*	Exercises per week.
Chemistry, III.	2	Chemistry, III	2
Chemistry, IV	4	English, IV	4
English, IV	4	German, I.	3
German, I	3	Mathematics, VI	4
Agriculture	5	Mathematics, VII	3
Military Drill and Tactics, I	3	Mechanics, IX	2
		Mechanics, XXIII	1
		Military Drill and Tactics, I	3

Electives—Physics, II. Botany. Horticulture. French, II. Latin, I, II. Mechanics, XXI. Military Drill and Tactics, III. Expression, III. Mathematics, X.

JUNIOR YEAR.—Continued.

SPRING TERM.

English, IV	4	English, IV	4
German, I	3	German, I	3
Chemistry, VI	3	Mathematics, VII	3
Chemistry, VII	2	Mechanics, IX	2
Zoölogy, I	3	Mechanics, II	2
Agriculture	2	Mechanics, I	4
Military Drill and Tactics, I	3	Mechanics, XXIII	1
		Military Drill and Tactics, I	3

Electives—Physics, II, IV, VI. Botany. Horticulture. French, II. Latin, I, II. Mechanics, XXI. Drawing, III, VI. Expression, IV. Mathematics, XIII.

**SENIOR YEAR.*

FALL TERM.

Agricultural Course.	Exercises per week.	*Mechanical Course.*	Exercises per week.
Chemistry, VI	2	Mathematics, VII	
Physiology, I	4	Mechanics, III	
Agriculture	3	Mechanics, XXIV	
Military Drill and Tactics, I	3	Mechanics, X	
		Military Drill and Tactics, I	

Electives—Chemistry, V, VIII. Physics, II. Botany. Horticulture. English, V. German, II, V. Latin, I, II. French, II, IV, V. History and Political Science, I, II. Mathematics, XI. Mechanics, XXI. Drawing, IV, V. Zoölogy, II, IV. Expression, V. Civil Engineering, III.

WINTER TERM.

Physiology, I	3	Mechanics, III	
Geology, I	2	Mechanics, X	1
Agriculture	2	Mechanics, XXIV	2
Horticulture	3	Military Drill and Tactics, I	3
Military Drill and Tactics, I	3		

Electives— Chemistry, VIII, IX. Physics, II. Botany. Agriculture, XI. Horticulture. English, V. German, III, IV, V. Latin, I, II. French, II, IV, V. Political Science, II, III. Mathematics, XII, XIV. Mechanics, XXI. Military Drill and Tactics, III. Expression, V. Zoölogy, III, V.

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* The equivalent of 15 hours of recitation per week is required.

SENIOR YEAR.—Continued.

SPRING TERM.

y, V	3	Mechanics, III	5
lture	1	Mechanics, XXIV	2
lture.	2	Mechanics, XXV	2
y Drill and Tactics, I	3	Military Drill and Tactics, I	3

tives—Chemistry, VIII, IX. Physics, II, III, IV. Botany. Agricul-
VIII. English, V. German, III, IV, V. Latin, I, II. French, III,
Mathematics, XII, XIV. Astronomy, I, II. Mechanics, XXI. Draw-
I, VI. Expression, V. Civil Engineering, III. Zoölogy, V, VI. Psy-
y.

THE PREPARATORY DEPARTMENT

OF THE

R. I. College of Agriculture and Mechanic Arts.

Students in the Preparatory Department are placed in one of the following classes, according to their attainments.

The object of this course is to prepare students from the country schools for the college courses in Agriculture and Mechanic Arts.

FALL TERM.

First Year Preparatory.		*Second Year Preparatory.*	
Advanced Arithmetic	5	Algebra	4
English	6	Geometry	3
General History	3	English	3
Physiography	2	Latin	5

WINTER TERM.

Algebra	5	Algebra	4
English	5	Geometry	3
General History	3	English	3
Physics	3	Latin	5

SPRING TERM.

Algebra	5	Algebra	4
English	5	Geometry	3
General History	3	English	3
Physics	3	Latin	5

Students able to take afternoon work may elect one of the following subjects: carpentering, freehand drawing, wood-carving, or practical agriculture.

Also students desiring special work in Agriculture or Mechanics, who are not prepared to enter the regular courses leading to a degree, may combine with work in the preparatory department such courses in Agriculture and Mechanics as may fit their especial needs. The successful completion of such a special course will lead to a certificate covering the work completed.

The Courses of Study Leading to a Degree.

FRESHMAN.

FALL TERM.

Physiography	4
Elementary Physics	4
College Algebra	4
Rhetoric	2
French or German	5
Freehand Drawing	1

WINTER TERM.

Agricultural Course.		*Mechanical Engineering, and Physical and Mathematical Courses.*		*Chemical, Biological, and Preparatory Medical Courses.*	
Elementary Physics	3	Elementary Physics	3	Elementary Physics	3
Plane Trigonometry	3	Plane Trigonometry	3	Plane Trigonometry	3
Rhetoric	2	Rhetoric	2	Rhetoric	2
French or German	5	French or German	5	French or German	5
Biology of Plants	3	Mechanical Drawing	1	Biology of Plants	3
Agricultural Mechanics	2	Wood-working	3	*Elective	3

SPRING TERM.

Elementary Physics	3	Elementary Physics	3	Elementary Physics	3
Solid Geometry	3	Solid Geometry	3	Solid Geometry	3
Rhetoric	2	Rhetoric	2	Rhetoric	2
French or German	3	French or German	3	French or German	3
Biology of Plants	3	Mechanical Drawing	2	Biology of Plants	3
Agriculture, I: Introduction to Agriculture	2	Wood-turning and Pattern-making	3	*Elective	3
Mechanical Drawing	1				

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* A list of electives will be announced at the close of each year.

SOPHOMORE.

FALL TERM.

Agricultural Course.		*Mechanical Course.*	
Chemistry	4	Chemistry	4
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Plane Surveying	3	Analytical Geometry	4
Botany: weeds and fodder plants	3	Mechanical Drawing	2
Agriculture, II and III; soils and drainage.	2	Moulding	2

WINTER TERM.

Chemistry	6	Chemistry	6
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Animal Biology	3	Analytical Geometry	4
Agriculture, IV: apparatus and constructions	3	Mechanical Drawing	1
Forging	1	Forging	2

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Animal Biology	3	Descriptive Geometry	3
Agriculture, V: fertilization	2	Mechanical Drawing	2
Surveying: topographical	4	Applied Electricity	3
		Surveying: leveling and topographical	2

FALL TERM.

Physical and Mathematical Courses.		*Chemical, Biological, and Preparatory Medical Courses.*	
Chemistry	4	Chemistry	4
Advanced English	2	Advanced English	2
German or French	3	German or French	2
Analytical Geometry	4	Biology of Plants	3
Advanced Physics: thermometry, thermodynamics, sound and telephony	3	*Elective	6

* A list of electives will be announced at the close of each year.

SOPHOMORE.—Continued.

WINTER TERM.

Physical and Mathematical Courses.		***Chemical, Biological, and Preparatory Medical Courses.***	
Chemistry	6	Chemistry	6
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Analytical Geometry	4	Animal Biology	3
Advanced Physics: optical phenomena and instruments	3	*Elective	3

SPRING TERM.

Chemistry	3	Chemistry	3
Advanced English	2	Advanced English	2
German or French	3	German or French	3
Descriptive Geometry	3	Animal Biology	3
Advanced Physics: electricity and magnetism	3	Theoretical Chemistry	3
Theoretical Chemistry	3	Inorganic Preparations	3

JUNIOR.

FALL TERM.

Agricultural Course.		***Mechanical Course.***	
Organic Chemistry	3	General English Literature and History	2
General English Literature and History	2	Analytical Chemistry	2
Analytical Chemistry	3	Calculus	4
Zoölogy of Farm Animals	3	Mechanical Drawing	2
Horticulture	3	Machine Shop	3
Economic Entomology	3	*Elective	4

JUNIOR.—Continued.

SPRING TERM.

Agricultural Course.		*Mechanical Course.*	
General English Literature and History	2	General English Literature and History	2
Agricultural Chemistry	3	Machine Design	2
*Elective	12	Machine Shop	3
		Engineering Laboratory	1
		Steam Boilers	2
		*Elective	3

FALL TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
General English Literature and History	2	Organic Chemistry	4	Organic Chemistry	4
Analytical Chemistry	2	General English Literature and History	2	Zoölogy of Farm Animals	3
Advanced Physics: electrical measurements and testing of instruments	3	Analytical Chemistry	3	General English Literature and History	2
Calculus	4	Volumetric Analysis	2	Analytical Chemistry	3
*Elective	6	*Elective	6	Volumetric Analysis	2
				*Elective	3

WINTER TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
General English Literature and History	2	Organic Chemistry	4	General English Literature and History	2
Calculus	4	General English Literature and History	2	Comparative Anatomy	3
Advanced Physics: direct current, construction of dynamos and motors, tests of efficiency	3	Sanitary Chemistry	2	Sanitary Chemistry	2
*Elective	8	Quantitative Analysis (gravimetric)	3	Quantitative Analysis	3
		Mineralogy and blowpipe	3	Organic Chemistry	4
		*Elective	3	*Elective	3

SPRING TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
General English Literature and History	2	General English Literature and History	2	General English Literature and History	2
Advanced Physics: alternating current, manipulation of alternators, transformers	3	Organic Chemistry	3	Entomology	3
*Elective	12	Industrial Chemistry	3	Comparative Invertebrate Zoölogy	3
		Quantitative Analysis (gravimetric)	3	*Elective	9
		*Elective	6		

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* At least one-half the electives in the Agricultural course must be chosen from subjects directly bearing on agriculture.

A list of electives will be announced at the close of each year.

SENIOR.—Continued.

FALL TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
Projective Geometry	3	Organic Chemistry	3	†Bacteriology	3
Advanced Physics: wiring of buildings, switch boards, systems of regulation, subways	3	Textile Coloring	3	Civil Government	3
Modern Methods in Analytics	3	Agricultural Chemistry	3	Scientific French or German	3
Heating and Ventilation of Buildings	3	Gas Analysis	3	Organic Chemistry	3
Analytical Mechanics	3	Physiological Chemistry	3	Physiological Chemistry	3
		Thesis Work	2	Comparative Physiology	1

†If not taken the previous year.

Given in alternate years.—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
Differential Equations	3	Organic Chemistry	3	Psychology	3
Theory of Functions	3	Textile Coloring	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Advanced Physics: photometric and electric tests of lamps, safety and distributing devices	3	Physiological Chemistry	3	Comparative Physiology	6
Inspection Excusions		Electro-Chemistry	3		
Thesis Work	2	Thesis Work	2		

SPRING TERM.

Physical and Mathematical Courses.		*Chemical Course.*		*Biological, and Preparatory Medical Course.*	
Differential Equations	3	Organic Chemistry	3	Economic Entomology, elective	2
Theory of Functions	3	Textile Fabrics and Machinery, with excursions to manufactories	3	Organic Chemistry	3
Theory of Equations	3	Agricultural Chemistry	3	Physiological Chemistry	3
Methods of Teaching Mathematics	1	Physiological Chemistry	3	Comparative Physiology	9
Advanced Physics: traction work and transmission of power	3	Thesis Work	2		
Inspection Excursion					
Thesis Work	2				

(In Botany and Zoölogy individual arrangements are to be made with heads of departments.)

AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the State who cannot attend the college as students, the faculty has arranged a course of study, known as the Agricultural College Extension. The plan, which is similar to that of the Chautauqua Reading Circle, provides a course of study embodying lines in agriculture and horticulture, as well as studies in literature and the sciences.

The course of study is designed to meet the requirements of anyone who may choose to pursue it. To complete the course, a satisfactory examination on at least one book under each number of the three years' course, given below, must be passed.

Candidates upon completing the course will receive a diploma.

COURSE OF STUDY.

FIRST YEAR.

		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	First Principles of Agriculture. *Voorhees*	$ 72	$ 72	$ 08
	American Literature. *Hawthorne and Lemmon*		1 12	10
2.	Home Floriculture. *Rexford*	1 50	1 20	08
	Silo, Ensilage, and Silage. *Miles*	50	38	04
	Helps for Home Makers. *Mary Blake*	75	56	08
3.	Insects and Insecticides. *Weed.*	1 25	1 00	08
	The Human Body (Briefer Course). *Martin*		1 20	10
4.	Feeding Animals. *Stewart.*	2 00	1 60	12
	American History. *Montgomery*		1 00	11
5.	Manual of the Constitution. *Andrews*		1 00	08

SECOND YEAR.

		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	Soils and Crops. *Morrow and Hunt*	$1 00	$ 75	$ 06
	Representative English Literature. *Pancoast*		1 60	12
2.	Text-Book of Botany			
	Horses, Cattle, Sheep, and Swine. *Curtis*	2 00	1 60	12
	Ornamental Gardening for Americans. *Long*	2 00	1 50	08
3.	How the Farm Pays. *Henderson and Crozier*	2 50	1 88	12
	How to Make the Garden Pay. *Greiner*	2 00	1 60	12
	Profitable Poultry Keeping. *Beale*	1 50	1 12	08
	Anna Maria's Housekeeping. *Power*	75	56	08
4.	Stock Breeding. *Miles*	1 50	1 12	12
	English History. *Montgomery*		1 12	11
5.	Political Economy (Briefer Course). *Walker*		1 00	08
	Astronomy. *Newcomb*		1 30	12

THIRD YEAR.

		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	Practical Farm Chemistry. *Greiner*	$1 00	$ 80	$ 06
	General History. *Meyers*		1 50	15
2.	A Text-Book of Chemistry.			
	The Nursery Book. *Bailey*	1 00	80	06
	Drainage for Profit and Health. *Waring*	1 50	1 12	08
3.	Langstroth on the Hive and Honey Bee. (Dadant's Revision)		1 12	08
	American Fruit Culturist. *Thomas*	2 50	2 00	22
	American Dairying. *Gurler*	1 00	80	06
4.	Green-House Construction. *Taft*	1 50	1 20	08
	Horse Breeding. *Sanders*	2 00	1 50	12
	Our Farming. *Terry*	2 00	1 60	13
	English translations from a foreign literature.			
	(Books will be recommended later according to the subject chosen.)			
5.	The New Womanhood. *Fernald*	1 25	94	08
	Advanced Course in Political Economy. *Walker*		2 00	15
	Soils and Rocks. *Stockbridge*	2 50	2 25	12

SUPPLEMENTARY READING.

Below is a list of books which the faculty recommends as reading supplementary to the above course; the same is suggested as a desirable list of books for the home, grange or town library.

	Publisher's Price.	Price to Members.	Postage.
Agriculture (3 vols). *Storer*	$5 00	$5 00	$ 36
Talks on Manures. *Harris*	1 75	1 31	08
Practical Dairy Husbandry. *Willard*	3 00	2 00	16
The Grasses of North America. (Vol. I.) *Beal*	2 50	2 25	10
" " " (Vol. II.) *Beal*	5 00	4 50	29
Turkeys and How to Raise Them. *Myrick*	1 00	75	07
The Spraying of Plants. *Lodeman*	1 00	80	07
Plant Breeding. *Bailey*	1 00	80	07
Soils. *King*	75	60	05
Manures, How to Make and How to Use Them. *Burpee.*	50	38	08
The Earth and its Story. *Heilprin.*	1 00	1 00	08
Fungi and Fungicides. *Weed.*	1 00	75	07
Survival of Unlike. *Bailey.*	2 00	1 60	10
Horticultural Rule Book. *Bailey*	75	60	06
Rural Grape Training. *Bailey.*	75	65	04
Vegetable Gardening. *Greene*			
The Farmer's Veterinary Adviser. *Law*	3 00	2 40	16
Plant Life on the Farm. *Masters*	1 00	75	06
The Shepherd's Manual. *Stewart*	1 50	1 12	11
Harris on the Pig. *Harris*	1 50	1 12	08
Practical Poultry Keeping. *Wright*	2 00	1 50	12
The Book of Poultry. *Wright.*	5 00	3 75	24
Colored Plates.	12 50	9 38	32
How Crops Feed. *Johnson*	1 50	1 12	11
How Crops Grow. *Johnson.*	1 50	1 12	11
A B C of Bee Culture. *Root*	1 25	1 00	12
A Modern Bee Farm. *Simmins*			
Bees and Bee-Keeping. (2 vols.) *Cheshire*			
The Production of Comb Honey. *Hutchinson*		25	
The Production of Extracted Honey. *Cowan*			
The Incubator and its Use. *Rankin*			
Poultry for Profit. *Jacobs*			

	Publisher's Price.	Price to Members.	Po tag
Incubators and Brooders. *Jacobs*			
Natural and Artificial Duck Raising. *Rankin*			
Poultry. (A Treatise on Raising Broilers and Ducks by Artificial Means.) *McFetridge*			
Hand-book of Plants. *Henderson*	$4 00	$3 20	$
Flowers, Fruits, and Leaves. *Sir John Lubbock*			
How to Know the Wild Flowers. *Dana*		1 50	Fr
Origin of Species. *Darwin*	2 00	1 50	
Animals and Plants under Domestication. (2 vols.) *Darwin*	5 00	3 75	
The American Commonwealth. *Bryce*		3 50	F
Letters to a Daughter. *Starrett*	75	60	
How the Other Half Live. *Riis*		1 25	
Amenities of Home	60	45	
How to Win. *Frances E. Willard*	1 00	75	
New England Legends and Folk Lore. *Drake*	2 00	1 50	
A Nameless Nobleman. *Jane Austin*	1 25	94	
Dr. LeBaron and His Daughter. *Jane Austin*	1 25	94	
Standish of Standish. *Jane Austin*	1 25	94	
Betty Alden. *Jane Austin*	1 25	94	
Half Hours with American History. (2 vols.) *Morris*	3 00	2 25	
Masterpieces of American Literature		1 00	
Riverside Literature Series		15	F
A Short History of the English People. *Green*		1 20	
Student's History of England. *Gardiner*		3 00	
Readings from English History. *J. R. Green*	1 50	1 12	
English Classic Series		12	Fre
Public Opinion (Periodical)			

Any of the above books may be bought of The Rhode Islan News Company, 113 and 115 Westminster Street, Providence, l members of the Extension Course, at the special price given.

Further information regarding the course may be obtained l consulting Part I of the 1896 report or by writing to the addre below.

J. H. WASHBURN, *President*,

Kingston, R. I.

MILITARY ORGANIZATION.

COMPANY A.

B. E. Kenyon, Captain.

W. F. Owen	Second Lieutenant.
W. C. Phillips	First Sergeant.
J. J. Fry	Sergeant.
A. E. Munro	Sergeant.
M. R. Cross	Sergeant.
J. R. Eldred	Sergeant.
A. A. Sherman	Corporal.
H. D. Smith	Corporal.
H. M. Brightman	Corporal.
A. L. Kenyon	Corporal.

COMPANY B.

M. A. Ladd, Captain.

A. W. Bosworth	First Lieutenant.
H. Knowles	First Sergeant.
R. N. Soule	Sergeant.
C. Knowles	Sergeant.
A. A. Denico	Sergeant.
C. N. Wheeler	Sergeant.
C. S. Burgess	Corporal.
A. E. Steere	Corporal.
L. G. K. Clarner	Corporal.
L. E. Wightman	Corporal.

Lieut. W. F. Owen	Battalion Adjutant.

BOTANICAL CLUB.

IN CHARGE OF THE PROFESSOR OF BOTANY.

Those interested in botanical subjects meet occasionally to discuss the local flora and simple botanical literature.

ZOÖLOGICAL CLUB.

The Zoölogical Club meets bi-weekly for the study of the local fauna, for the presentation of brief papers, and for the review of current journals. A special room is devoted to the collections and preparations made by the club. The daily observations by the members upon the occurrence, habitat, structure, life history and habits of the animals are on file for ready reference. Special excursions are made to favorable localities. Opportunities for field work in zoölogy are remarkably fine.

OFFICERS.

C. B. MORRISON	President.
H. KNOWLES	Secretary.
E. PAYNE	Curator.

RELIGIOUS ORGANIZATIONS.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

W. M. Hoxsie	President.
H. D. Smith	Vice-President.
R. W. Pitkin	Cor. Secretary. Rec. Secretary.
L. G. K. Clarner	Treasurer.

YOUNG WOMEN'S CHRISTIAN UNION.

M. W. Harvey	President.
B. E. Bentley	Vice-President.
E. M. Parkhurst	Secretary.
E. P. Wells	Treasurer.

ALUMNI ASSOCIATION.

Howland Burdick, President.

George A. Rodman, Secretary,
Woonsocket, R. I.

Louis H. Marsland, Treasurer,
Franklin, N. Y.

STUDENTS.

POST GRADUATES.

Arnold, Sarah Estelle	Wakefield,	R. I.
Cargill, Edna Maria	Abbott Run,	"
Flagg, Martha Rebecca	Kingston,	"
Greenman, Adelaide Maria	Kingston,	"
Grinnell, Archie Franklin	Middletown,	"
Hanson, Gertrude Maie	Peace Dale,	"
Kenyon, Charles Franklin	Shannock,	"
Marsland, Louis Herbert	Franklin,	N. Y.

GRADUATES OF 1898.

Arnold, Sarah Estelle, Sci	Wakefield,	R. I.
Barber, George Washington, Agr	Shannock,	"
Cargill, Edna Maria, Sci	Abbott Run,	"
Case, John Peter, Agr	Gould,	"
Clarke, William Case, Jr., Sci	Wakefield,	"
Congdon, Henry Augustus, Mech	Kingston,	"
Flagg, Martha Rebecca, Sci	Kingston,	"
Harley, William Ferguson, Agr	Pawtucket,	"
Turner, Harriette Florence, Sci	Ontario Centre,	N. Y.
Wilson, Grace Ellen, Sci	Allenton,	R. I.

SENIORS.

Arnold, Henry Francis Walling, Mech	Woonsocket,	R. I.
Bosworth, Alfred Willson, Sci	Boston,	Mass.
Brooks, Ralph Ordway, Sci	Somerville,	"
Cumming, John Stuart, Mech	Pawtucket,	R. I.
George, Lillian Mabelle, Sci	Amesbury,	Mass.

Harvey, Mildred Wayne, Sci	Allenton,	R. I.
Kenyon, Blydon Ellery, Agr.	Wood River Junc.,	"
Knowles, Carroll, Mech	Kingston,	"
Knowles, Harry, Sci	Point Judith,	"
Ladd, Merrill Augustus, Mech	Bay Shore,	N. Y.
Morrison, Clifford Brewster, Sci	Pawtucket,	R. I.
Owen, William Frazier, Mech	Cannonsville,	N. Y.
Payne, Ebenezer, Sci	Lyons Farms,	N. J.
Phillips, Walter Clark, Mech.	Lafayette,	R. I.
Reynolds, Robert Spink, Mech	Wickford,	"
Rice, Minnie Elizabeth, Sci	Wickford,	"
Sherman, Abbie Gertrude, Sci	Kingston,	"
Sherman, George Albert, Mech	West Kingston,	"
Thompson, Sally Rodman, Sci	Wakefield,	"
Wells, Grace Perry, Sci	Kingston,	"

JUNIORS.

Brightman, Henry Maxon, Mech	Westerly,	R. I.
Cross, Charles Clark, Mech	Narragansett Pier,	"
Cross, Morton Robinson, Sci	Wakefield,	"
Eldred, John Raleigh, Mech	Kingston,	"
Fison, Gertrude Sarah, Sci	Peace Dale,	"
Fry, John Joseph, Sci.	East Greenwich,	"
Grant, Arnold Theodore, Mech	Newport,	"
James, Ruth Hortense, Sci	Kenyon,	"
James, Sarah Lila, Sci	Kenyon,	"
Kenyon, Amos Langworthy, Agr.	Wood River Junc.,	"
Munro, Arthur Earle, Agr	Quonochontaug,	"
Northup, Abbie Fidelia, Sci	Wickford,	"
Pearson, Alfred, Jr., Sci	Newburyport,	Mass.
Steere, Anthony Enoch, Mech	Chepachet,	R. I.
Stillman, Lenora Estelle, Sci	Kenyon,	"
Tucker, Bertha Douglass, Sci.	Swansea Centre,	Mass.
Wheeler, Charles Noyes, Sci.	Shannock,	R. I.

SOPHOMORES.

Briggs, Nellie Albertine, Sci	Shannock,	R. I.
Burgess, Charles Stuart, Mech	Providence,	“
Clarner, Louis George Karl, Jr., Agr.	Pawtucket,	“
Dawley, Edna Ethel, Sci	Kenyon,	“
Dawley, William James, Agr	Kenyon,	“
Denico, Arthur Albertus, Sci	Narragansett Pier,	“
Reuter, Louis John, Mech	Westerly,	“
Sherman, Anna Brown, Sci	Kingston,	“
Sherman, Arthur Almy, Mech	Portsmouth,	“
Sherman, Elizabeth Agnes, Sci	West Kingston,	“
Smith, Howard Dexter, Mech	North Scituate,	“
Wells, Emily Potter, Sci	Kingston,	“

FRESHMEN.

Brayton, Bertha May	Fiskeville,	R. I.
Clarke, Latham	West Kingston,	“
Ferry, Oliver Needham	Palmer,	Mass.
Kenyon, Charles Franklin	Point Judith,	R. I.
Pitkin, Robert William	Providence,	“
Reynolds, Arthur Leone	Athol,	Mass.

PREPARATORY DEPARTMENT.

Albro, William Henry	Peace Dale,	R. I.
Barber, Kate Grace	Carolina,	“
Bell, Louis Frederick, Jr	Wakefield,	“
Brennan, Thomas	Peace Dale,	“
Carpenter, Hortense Blakesley	Kingston,	“
Church, Albert Sumner	Narragansett Pier,	“
Clarner, John Adam	Pawtucket,	“
Conway, William Joseph	Narragansett Pier,	“
Cooke, Laura Marion	Narragansett Pier,	“
Crandall, Elverton Jewett	Adamsville,	“

Cross, Frederick Lawrence	Narragansett Pier,	R. I.
Cross, John Gardiner	Narragansett Pier,	"
Daniels, Robert Keeney.	Glastonbury,	Conn.
Duffy, John Edward	River Point,	R. I.
Flagg, Caleb Belcher	Kingston,	"
Gardiner, Leigh Orrin	Peace Dale,	"
Hoxsie, Fred Clifford	Woodville,	"
Hoxsie, Willard Munroe	Quonochontaug,	"
James, Marcia Helen Wood	Kenyon,	"
Jillson, Laura Agatha	Woonsocket,	"
Keefer, Edith L	Oceanus,	N. Y.
Kent, Raymond Warren	Woonsocket,	R. I.
Loomis, William	Glastonbury,	Conn.
MacKnight, Robert Bruce	Adamsville,	R. I.
McFarland, Harold Ross	Little Compton,	"
Mowry, John Joseph	Woonsocket,	"
Pascoe, Milton Cooper	Narragansett Pier,	"
Pearse, George Merton	Wakefield,	"
Peckham, Arthur Noyes	Kingston,	"
Quinn, Mary Louise	Wakefield,	"
Rice, George Henry	Wickford,	"
Rodman, Edith Stoughtenburg	Kingston,	"
Saunders, Albert Ainsworth	Carolina,	"
Thompson, Leroy Eldred	Narragansett Pier,	"
Tillinghast, Emma	Slocumville,	"
Wells, Thomas Perry	Kingston,	"
Wheeler, Everett Eugene	Shannock,	"

SPECIALS.

Andrews, Carlton Garfield	Potter Hill,	R. I.
Arnold, William Ballou	Woonsocket,	"
Briggs, Glenn Ira	Woonsocket,	"
Campbell, Duncan	Phenix,	"
Case, Harold Warren	Pawtucket,	"

Chace, Emery Perkins	Warren,	R. I.
Clarke, Isabelle Nye	Usquepaugh,	"
Clarke, William Lamont Wheeler	Jamestown,	"
Cornell, Bailey Jordan	Croton-on-Hudson,	N.Y.
Crandall, Linton B	Ashaway,	R. I.
Dimock, Mary Winifred	Merrow,	Conn.
Doughty, Robert Stanley	Providence,	R. I.
Emmet, James R	Peace Dale,	"
Flagg, Clarence LeVoy	Arnold Mills,	"
Goddard, Edith	Brockton,	Mass.
Graham, Ernest	Wakefield,	R. I.
Greene, Prescott Morrill	Peace Dale,	"
Grinnell, Robert Elisha	Middletown,	"
Harrison, Edmund	Asbury Park,	N. J.
Harrower, Charles Spurgeon	Peace Dale,	R. I.
Hopkins, Fannie Lewis	Plainfield,	Conn.
Hopkins, Henry Oscar	Plainfield,	"
Hurter, Florence Dudley	Somerville,	Mass.
Knowles, Leroy Weston	Point Judith,	R. I.
Krekorian, Garabed	Harpoot,	Turkey.
Landers, Adolph Earl	Newport,	R. I.
Lanphear, Elisha Frederic	Peace Dale,	"
LeClair, Charles Arthur	Bristol,	"
Maxson, Ralph Nelson	Westerly,	"
Moffitt, William Smith	Newport,	"
Morton, John Garfield	New York,	N. Y.
Mowry, Jesse Benton	Chepachet,	R. I.
Newton, Dudley, Jr	Newport,	"
Palmer, Sadie Wilcox	Wakefield,	"
Piper, Edgar R	Kingston,	"
Rose, George Tucker	Kingston,	"
Sherman, Robert Joseph	Usquepaugh,	"
Sherman, Walter Nathaniel	Allenton,	"
Soule, George Canning, Jr	East Greenwich,	"
Soule, Ralph Nelson	East Greenwich,	"

Spink, Myra Bertine	Wickford,	R. I.
Steere, Roena Hoxsie	Wood River Junc.,	“
Stillman, Fannie Esther	Kenyon,	“
Tucker, Attmore Arnold	Wakefield,	“
Webster, Bertie James	Usquepaugh,	“
Wells, Herbert Comstock	Kingston,	“
Wightman, Levi Eugene	South Scituate,	“
Wilby, John	Kingston,	“
Wilcox, Charles William	Kingston,	“
Wilson, Joseph Robert	Allenton,	“
Wright, Silas Wilber	Wakefield,	“

SPECIALS IN WOOD-CARVING.

Mrs. Charles Auel	Shannock,	R. I.
Miss Mary J. Brown	Kingston,	“
Mrs. George Carmichael	Shannock,	“
Mrs. George Clark	Shannock,	“
Miss Julia Clark	Shannock,	“
Mrs. A. A. Greenman	Kingston,	“
Miss May J. Lanphear	Peace Dale,	“
Mrs. W. J. Nichols	Shannock,	“

SPECIALS IN POULTRY SCHOOL.

Bicknell, Joseph Inglis, Jr	Riverdale, New York City.	
Crafts, Roswell Pliny	Holyoke,	Mass.
Evans, Bailey Winslow	Providence,	R. I.
Farnum, Joseph Elisha	Fall River,	Mass.
Fisher, George Belmont	Mansfield,	“
Glasgow, William Anderson	Mahwah,	N. J.
Gray, William Parker	Bedford,	N. Y.
Hebberd, Susan Ward	Morristown,	N. J.
Horrigan, John	South Pomfret,	Vt.
House, Eliot Vose	Providence,	R. I.

Hutchinson, Herbert Burnham	Woodstock,	
Kingman, Mrs. Emma L	Waterbury,	Co
Magee, Joseph Emory	North Sparta,	N
Mead, Newcom	Hawthorne,	Co
Parsons, Archibald A.	Wilkesbarre,	
Potter, Frank Field	South Deerfield,	M
Rose, James William	Bloomville,	N
Rice, Edward L.	Cape May, C. H.,	N
Robbins, Luther	Hollis Depot,	N.
Scott, Wilbur Thaxter	Hawley,	M
Smith, Thomas Nevins	Attleboro,	

Post Graduates	8
Graduates of 1898	10
Seniors	20
Juniors	17
Sophomores	12
Freshmen	6
Preparatory Department	37
Specials	51
Specials in Wood-carving	8
Specials in Poultry School	21
Total,.counting none twice	187

TREASURER'S REPORT.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

1898.		Dr.	
Jan.	1.	To cash balance on hand	$130 41
Dec.	31.	State of Rhode Island	2,600 07
		J. H. Washburn, President, for students' board, etc.	10,730 44
		Cash received from incidentals	980 61
		Cash received from interest	11 32
		Cash borrowed from the Morrill Fund	7,315 08
			$21,767 93

1898.	Cr.	
	By salaries	$1,187 88
	Library	1 02
	Postage, stationery, and printing	197 01
	Freight and express	692 98
	Traveling	168 48
	Labor	7,679 86
	Store	1,324 56
	Incidentals	4,397 14
	Construction and repairs	1,117 80
	Provisions	4,005 81
	Boarding expense	952 31
	Cash on hand	43 08
		$21,767 93

756501

THIS IS TO CERTIFY that the undersigned, auditing committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, treasurer, as above, and find the same to be correct, leaving a balance in the said treasurer's hands of forty-three dollars and eight cents ($43.08).

GARDINER C. SIMS,
J. V. B. WATSON,
Auditing Committee.

THE RHODE ISLAND STATE AGRICULTURAL EXPERIMENT STATION *in account with the* UNITED STATES' APPROPRIATION.

1898.	DR.		
	To receipts from the treasurer of the United States as per appropriation for the year ending June 30, 1898, under act of Congress approved March 2, 1887.		$15,000 00

1898.	CR.		
June 30.	By salaries	$9,691 39	
	Labor	2,059 15	
	Publications	209 29	
	Postage and stationery	168 39	
	Freight and express	52 97	
	Heat, light, and water	321 04	
	Chemical supplies	133 88	
	Seeds, plants, and sundry supplies	321 73	
	Fertilizers	195 23	
	Feeding stuffs	427 45	
	Library	210 07	
	Tools, implements, and machinery	41 57	
	Furniture and fixtures	95 33	
	Scientific apparatus	92 00	
	Live stock	25 00	
	Traveling expenses	306 65	
	Contingent expenses	13 00	
	Building and repairs	635 86	
			$15,000 00

WE, the undersigned, duly appointed auditors of the corporation, do hereby certify that we have examined the books and accounts of the Rhode Island State Agricultural Experiment Station for the fiscal year ending June 30, 1898; that we have found the same well kept, and classified as above, and that the receipts for the year from the treasurer of the United States are shown to have been $15,000, and the corresponding disbursements $15,000, for all of which proper vouchers are on file, and have been by us examined and found correct, thus leaving no balance.

And we further certify that the expenditures have been solely for the purposes set forth in the act of Congress approved March 2, 1887.

Signed,
HENRY L. GREENE,
J. V. B. WATSON,
Auditors.

I hereby certify that the above is a true copy from the books of the account of the institution named.

MELVILLE BULL,
Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

I hereby certify that the above signature is that of the treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

H. L. GREENE,
President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

1898.	DR.	
June 30.	To balance from last year	$1,150 72
	Station receipts	1,106 78
	Station receipts, fertilizer inspection	774 83
	Interest	52 66
		$3,084 99
1898.	CR.	
	By salaries	$862 57
	Labor	882 19
	Publications	34 83
	Postage and stationery	34 20

Cr.	
By Freight and express	$30 45
Heat, light, and water	53 12
Chemical supplies	7 80
Seeds, plants, and sundry supplies	221 26
Fertilizers	41 15
Fertilizer control	14 46
Feeding stuffs	189 04
Library	404 22
Tools, implements, and machinery	86 77
Traveling expenses	109 91
Contingent expenses	35 00
Building and repairs	76 12
Balance	1 90
	$3,084 99

This certifies that the undersigned, auditing committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, treasurer of the Agricultural Experiment Station, and the vouchers corresponding therewith, for the year ending June 30, 1898, and find the same correct.

The total receipts are $3,084.99, and the total expenditures are $3,083.09, thus leaving a balance to new account of $1.90.

HENRY L. GREENE,
J. V. B. WATSON,
Auditing Committee.

Synopsis of the Report of the Treasurer of the Rhode Island College of Agricultu and Mechanic Arts to the Secretary of Agriculture and the Secretary of t Interior, of amount received under Act of Congress, of August 30, 1890, in a of Colleges of Agriculture and the Mechanic Arts, and of the disburseme thereof, to and including June 30, 1898 :

Balance on hand July 1, 1897	$23,33
Installment for 1897–'98, received July 13, 1897	23,0
	$46,

DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE 30, 1898.

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction	$7,513 15	
SCHEDULE B.—Disbursements for Instruction in the Mechanic Arts and for facilities for such instruction	7,239 44	
SCHEDULE C.—Disbursements for Instruction in English Language and for facilities for such instruction	5,762 42	
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction	2,221 85	
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction	17,762 74	
SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction	3 50	
Total expended during the year		$40,503 10
Balance remaining unexpended		5,834 09
		$46,337 19

I HEREBY CERTIFY that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named; and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their application in the industries of life, and to the facilities for such instruction.

MELVILLE BULL, *Treasurer.*

INVENTORY OF THE PROPERTY OF THE RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Property of the Department of Agriculture and Horticulture	$11,645	28
Property of the Department of Mechanic Arts	15,646	10
Property of the Department of English and History	6,489	77
Property of the Department of Mathematics	1,744	97
Property of the Department of Natural Sciences	23,606	[illegible]
Property of the Department of Political Science	273	[illegible]
Property of the Boarding Department	8,605	[illegible]
Property of the Women's Dormitory	1,300	[illegible]
Guns, cannons, and other military equipment	4,641	[illegible]
Furniture in offices and schoolrooms	2,116	[illegible]
Scientific apparatus, tools, and machinery of the Experiment Station.	5,494	
Books of the Experiment Station	3,605	
Other property of the Experiment Station	7,071	
Amount of personal property	$91,239	09
Watson House	$2,500	00
Hothouse	200	00
Ladd Laboratory	10,000	00
Blacksmith Shop	400	00
Carpenter Shop and Chemical Laboratory	5,050	00
Boarding Hall	10,000	00
Davis Hall	45,000	00
Lippitt Hall	45,000	00
Water Supply	10,000	00
Taft Laboratory	23,500	00
Barns	13,000	00
Farms, roads, and improvements	18,000	00
Amount of real estate	$182,650	00
Total amount of real estate and personal property	$273,889	09

missing